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PAPERS AND DISCUSSIONS
OF THE
SECTION OF SURGERY
AT ITS MEETING AT THE HARVARD MEDICAL SCHOOL, BOSTON, JUNE 13, 1922.

Malignancy in the War Veterans.

By **William F. Cotting, M.D., Boston.**

This series of cases is presented essentially because of the youth of the subjects, most of them at an age when one hardly expects carcinomatous disease. Whether there is any significance in the fact that these men were all ex-soldiers, therefore subjected recently to very extraordinary strain of exertion and abnormal living conditions, or whether the opportunity to present so many cases of this type within these age limits is due to the close supervision and study of illnesses occurring among war veterans, would be difficult to answer.

Parker Hill Hospital, during the period covered, has drawn a large share of the cases of serious illnesses, particularly the surgical cases, from a very large body of ex-soldiers belonging to the first, or New England District. Considering the age of the expeditionary forces, it is significant that the percentage of this very large total of new-growths, or of the number of cases of illness, is rather strikingly large. That the outcome of these cases was so nearly always unfortunate, need give no surprise to those familiar with the courses of cancer in young individuals.

The first nine cases are true carcinoma, attested in seven by pathological report, with or without autopsy.

Case 1. P. F., age 26.

Family History: Father and mother died of pneumonia. One brother in good health. No tuberculosis, cancer or insanity in the family.

Past History: Negative.

Present Illness: Patient enjoyed good health until the winter of 1918-1919, after which he became badly constipated, passed mucus and often a blood-streaked stool. Condition gradually grew worse, and in the fall of 1920, patient developed a pain in the rectum. Pain was relieved by bowel movement for about two hours. On account of the severity of this pain, patient went to the Boston City Hospital, where a biopsy was done, and Cancer of the Rectum diagnosed. On March 23, 1921, colostomy was performed, and these findings reported:

"Large mass found at lower end of sigmoid and upper rectum, infiltrating surrounding tissues. Mass was smooth, firmly adherent, and the size of a small orange."

After a few weeks of convalescent treatment at Sterling, Mass., pain became so severe that patient was referred to U. S. Veterans' Hospital No. 36 for treatment. On admission, May 7, 1921, examination showed thin, poorly-nourished white man,—said to have lost twenty-five pounds during the last year. Chest was negative, except for a few sub-crepitant râles in both bases in axillae. Abdomen presented a functioning colostomy opening. Digital examination of rectum, under gas anesthesia, revealed a circular mass, about two inches inside the spincter, surrounding the lumen of the gut. It was friable and bled easily.

May 3, 1921: Patient receiving radium treatment at the Collis P. Huntington Memorial Hospital.

Several treatments were given, without apparent relief.

From November until April 25, 1922, when patient died, his cachexia increased, the pain became very severe, and an edema of the extremities developed.

Autopsy was performed, and the following findings reported:

"Heart, lungs and spleen essentially negative.

"Liver, weight 2040 grams, shows a large mass involving practically the whole of the left lobe. It is white, hard and contracted. There are visible on the superior surface of the right lobe, two other similar masses which are somewhat smaller.

"The gall-bladder appears small and shrunken, and is filled with many stones. These stones take up the full capacity of the gall-bladder, which is shrunken down about them.

"The kidneys are negative. On the right, however, there is a definite kinking of the ureter, at the brim of the pelvis. From this point up, and including kidney pelvis, the entire lumen is much dilated, being from 1½ to 2 centimeters in diameter. The ureter is filled with urine.

"The other viscera are not remarkable, except for the colostomy.

"The rectum is surrounded by a mass of extremely friable, gray, necrotic tissue, which has invaded the lumen for about 6 centimeters. This mass has also invaded the bladder and recto-vesicular tissue.

Diagnosis: carcinoma of rectum, metastatic carcinoma of liver, cholelithiasis."

CASE 2. S. C., age 27.

Family History and Past History: Negative.

Present Illness: Patient admitted to U. S. Veterans' Hospital No. 36 March 12, 1920. For the past two years patient has complained of frequent nosebleeds. This is the only complaint. On admission, the physical examination was negative, except for slight anemia and a new-growth in the left nostril. Tissue from this nostril showed the following:

"Specimen shows carcinoma, the cells of which are but little differentiated and show mitotic figures."

A few days later a second biopsy was performed by Dr. Wright of the Cancer Commission, Harvard University, and a diagnosis of carcinoma made.

On May 1, 1920, under nitrous oxide anesthesia, a radical excision of the tumor was performed. It was necessary to resect the septum and the greater part of the superior maxillary bone. Patient returned from the operating room in a surgical shock. Proctoclysis and hypodermoclysis were instituted.

May 4, 1920: Since operation patient has developed a cough, slight temperature and increase in pulse rate. Chest findings indefinite.

May 8, 1920: Examination of the chest shows slight dulness on the right, from the third rib down. There are a few crepitant râles.

May 15, 1920: General condition slightly worse than it has been for the past week. Examination of the chest shows definite signs of consolidation, which might be an abscess of the lungs or empyema. Paracentesis was not possible on account of his general condition. Patient has occasional chills and is very restless. Sputum examination positive for diplococci pneumoniae. X-ray of the chest by bedside unit shows the following:

"Large triangular area of increased density with base at the periphery, under region of right middle lobe. Findings consistent with pneumonic process."

Sputum report from the state laboratory showed one gram positive and one gram negative for staphylococci. Hospital laboratory showed sputum negative for pneumococci and positive for staphylococci.

Patient's condition steadily grew worse from hour to hour,—temperature, pulse and respiration varying, until May 27, 1920, when patient died. Autopsy was not performed.

CASE 3. S. T., age 30.

Family History: Negative.

Past History: Negative, up until present trouble.

Present Illness: While in France, November, 1918, patient reported to hospital infirmary with pain in the back, between the scapulae. This pain has been more or less constant up until three months ago, when it was referred to the right side of the chest, gradually increasing in severity. Patient was admitted to U. S. Veterans' Hospital No. 36 February 23, 1921, for observation for tuberculosis. He had lost forty pounds in the past months. Chief complaint was pain in the right axilla, accompanied by a cough and dyspnoea. Examination of the chest —negative for tuberculosis; temperature, pulse and respiration normal.

February 28, 1921: Patient cannot sleep, has marked dyspnoea, severe pain in back and side,—referred to the lower quadrant of the belly. X-ray of the chest shows:

"Lower portion of the right chest very dense, and obliterating the right costo-phrenic angle. The line of density follows the axillary border.—slight haziness above this area. No fluid level noted. There is slight displacement of the heart to the left. The shadow in the right base merges with the diaphragm."

Physical examination on this date showed signs of fluid, without any definite level, and condition thought to be a chronic pleurisy with effusion more or less localized by adhesion.

March 4, 1921: Condition unchanged. Patient is raising a large amount of sputum, which is negative for tubercle bacilli. Urinalysis negative. Examination of the abdomen by the Surgical Service on this date showed nothing remarkable. Paracentesis of the right chest performed and two grams of straw-colored fluid removed.

March 8, 1921: Chest aspirated, and 120 c. c. of fluid removed, followed by considerable relief of the dyspnoea. Sputum negative for tubercle bacilli. Blood Wassermann negative. Blood count normal. Culture of chest shows pneumococci.

Condition remained the same until the 1st of April, when the pain became centered over the gall-bladder region. This area was exquisitely tender and had slight muscle spasm on palpation. Paracentesis revealed no fluid. Respirations rapid and labored.

April 8, 1921: Condition very much improved. Respiration less labored; not so much pain. X-ray shows marked diminution of the dense area of the right chest. Patient has lost five pounds in the past week; sputum scanty and negative for tubercle bacilli. Examination of the belly at this time shows an indefinite, irregular mass in the upper right quadrant. It was thought that this might be the liver pushed down by fluid in the chest. Chest was tapped and only a small amount of blood obtained.

April 21, 1921: Considering the fact that for the past week the symptoms have pointed more to gall-bladder, and the fact that there is a demonstrable tumor mass, laparotomy was performed. The liver was found somewhat enlarged, and a large retroperitoneal mass, presumably cancer, was found. This mass was extensive, and at a position just behind the liver, at the head of the pancreas. Culture was taken from the abdominal fluid which was present in small amount, and specimen removed from tumor mass.

Patient's condition grew steadily worse, and he died on the 23rd of April, 1921. No autopsy. Examination of the tissue showed carcinoma.

CASE 4. J. N., age 34.

Family History: Negative for tuberculosis, cancer or insanity.

Past History: Operation for appendicitis when a child. Was gassed in France, July 1, 1918. Hospitalized for six months.

Present Illness: After discharge in 1919, patient was granted vocational training on account of the dyspnoea which he suffered following gassing. While in training, he had pain in the region of the stomach, and it was for this pain that he was sent to the hospital. Patient states that for the past three or four months he has noticed a yellowish tint to the skin, which has gradually increased and become more marked during the last three weeks. Patient was admitted to this hospital Jan. 5, 1922.

Examination reveals a well-developed and fairly well-nourished white male. There is a marked yellowish tint of all conjunctivi. Examination of the chest reveals marked increase of vocal fremitus in the right apex, with slight dulness over the right apex, and broncho-vesicular breathing. There are no râles present. Heart negative. Abdomen: tenderness in the midline, below the sternum. No masses felt. Lower border of liver is about a finger's breadth below the costal margin.

January 9, 1922: X-ray of the chest shows slight cloudiness in the right apex.

January 13, 1922: Bismuth series of the gastro-intestinal tract shows the following:

"Six hours after motor meal, fluoroscopic examination shows meal in lower ileum and caecum. These structures are of normal contour and position. Caecum is slightly fixed. Liquid meal was given, and revealed an orthotonic cow-horn stomach of normal contour. Pylorus somewhat fixed. Plyoric ring patent. No duodenal cap. Twenty-four hour plate shows meal in caecum, ascending and transverse colon and rectum. The above changes are indicative of moderate gastroptosis. Right upper quadrant lesion cannot be ruled out."

January 24, 1922: Patient passing normal colored stools. Urinalysis negative, except for bile. Blood Wassermann negative.

February 18, 1922: Considering the fact that this patient has had a persistent jaundice, presumably of the obstructive type, and that patient's condition has not improved, exploratory operation was deemed advisable. This was done on this date, and no evidence of stones in the gall-bladder or ducts found. There were numerous adhesions in the region of the gall-bladder, extending down to the caecum. Gall-bladder was drained, the adhesions severed, and the belly closed.

For the next two or three days patient made a good recovery, gall-bladder draining well, pulse and temperature normal.

February 21, 1922: Patient is taking small amounts of liquid at frequent intervals. He is troubled considerably with hiccups; spent a very poor night on account of this. Nitroglycerine offered temporary relief. Patient occasionally vomits a small amount of greenish-yellow fluid.

February 22, 1922: Gall-bladder draining well. Patient's jaundice increasing in the past 48 hours; hiccup has persisted without relief. Examination of the wound shows that because of hiccup a few stitches have broken loose and wound is oozing a small amount of fresh blood. Patient is running a slight temperature and pulse is up to 120. Jaundice increasing; gall-bladder draining well.

February 27, 1922: Patient being fed per rectum. Hiccups only occasional and mild in character. There is presumably a peritonitis present, and, considering the fact that we have an obstructive jaundice, question of cancer is entertained.

May 1, 1922: Patient gradually growing weaker; jaundice more intense until death.

Autopsy shows the following points of interest:

"Pleura of the right lung is everywhere adherent to the chest wall. Left lung has one or two small adhesions anteriorly, otherwise negative.

"Heart is negative.

"Lungs negative, except for hypostatic pneumonitis.

"The liver weighs 2100 grams. Superior surface is covered with areas of fibrin. On the lower margin is an indentation corresponding to a mass of clotted blood, which weighs 500 grams. Otherwise the liver is not remarkable.

"Gall-bladder is bound to the liver firmly by adhesions. At the tip there is a small area, undergoing surgical repair. The mucosa of the gall-bladder is slightly injected; bile is thin and yellowish, non-purulent. On opening the gall-bladder there is a mass measuring 2 x 1 centimeters in diameter, which surrounds the cystic duct and invades its lumen. This mass is pinkish-yellow in color and contains a few minute areas of hemorrhage, the mass compressing the duct markedly. The duct, however, is patent, as a very fine probe can be pushed through.

"Kidneys are negative.

"Spleen is negative.

"The other viscera are not remarkable.

"Histological diagnosis: Heart shows edema of connective tissue; cardiac fibers are cloudy and show occasional fatty changes. There is some sedimentation of the fibers. Blood-vessels are all dilated. Acute infection—Myocarditis.

"Lungs show areas containing giant cells of caseous necrosis. Alveolar walls contain dilated blood-vessels which show a large number of polymorphonuclear leukocytes in lumen. Alveoli contain considerable serum. Hypostatic pneumonia; pulmonary tuberculosis.

"Tumor consists of epithelial cells, fairly closely packed together, with an arrangement which is slightly suggestive of alveoli. There is an abundant strauma in which there are numerous polymorphonuclear leukocytes. Many of these are acidophilic.

"Diagnosis: Alveolar cancer."

CASE 5. W. C., age 33.

Family History and Past History: Negative.

Present Illness: In January, 1920, patient began to have pain in the region of the stomach, associated with belching of gas and heart-burn. He had no vomiting. Antacids did not relieve his symptoms; eating made them worse. The bowels were constipated all this time. Just prior to admission patient began to complain of dyspnoea and dizziness. He states that his abdomen began to swell about eight weeks ago.

On admission, September 17, 1920, examination revealed a well-developed and nourished male negro, showing signs of moderate loss of weight. Eyes, ears, nose and throat negative. Glands palpable in sub-maxillary, anterior and posterior cervical and inguinal regions. These are small and discrete. Over the chest wall there are eight nodules, presumably glands, from one to three centimeters across. These are slightly tender and are not adherent to the skin, but fastened to the fascia beneath. The large one feels lobulated. Small scars are found in the axillae from incisions through which the glands are said to have been excised at the Newton Hospital in August, 1920. Lungs are negative, except for a few medium moist râles on the right. Heart negative. Abdomen distended, with definite signs of shifting dulness. Succussion sounds and fluid wave are both easily elicited. No masses made out. Extremities show considerable wasting. Reflexes normal. Paracentesis of the abdomen done, and 2900 centimeters of blood-stained fluid removed. Abdomen injected with oxygen. X-ray shows the following:

"Liver appears slightly enlarged. Shadows in the abdomen indicative of fluid; no other pathology noted."

Urinalysis shows trace of albumin, many red cells, numerous hyaline casts and a few pus cells.

Patient feels fairly well, but will not eat.

September 17, 1920: Urine shows a large amount of albumin, a few red cells and a few hyaline casts; many leukocytes. Abdominal fluid shows specific gravity, 1012; white cells, 3100 per centimeter; red cells, 7000 per centimeter. Smear shows small mononuclears, 72; polymorphonuclear leukocytes, 28; no tubercle bacilli found. Culture showed an abundant growth of B. Coli. Albumin, 10 per cent.

September 23, 1920: Abdomen is filling up fairly fast with fluid. Patient has considerable discomfort on account of the distention. He was seen by medical consultant and a diagnosis of pulmonary tuberculosis and tuberculous peritonitis was made. Abdomen was tapped and nearly 6000 centimeters of blood-tinged fluid removed. Patient very weak and uncomfortable.

September 25, 1920: Condition much worse. Examination of the ascitic fluid shows no tubercle bacilli; blood count shows 3,448,000 red cells; 8600 white cells; hemoglobin, 75 per cent.; 97 per cent. polymorphonuclear leukocytes; 2 per cent. small mononuclears; 10 per cent. large mononuclears.

Patient died September 26, 1920.

Autopsy performed shows briefly the following:

Peritoneal cavity contains about one quart of dark, straw-colored fluid. Peritoneum throughout has a whitish, granular appearance.

The liver reaches about two inches below the edge of the ribs. It is deep purple in color and shows numerous whitish nodules on the surface.

Diaphragm reaches to the fifth space on the left, and to the fourth space on the right.

Enlarged lymph glands can be felt behind the sternum.

Both lungs are adherent to the chest wall throughout.

The greater omentum is thickened and tough, and is studded throughout with small yellow tumors, about a millimeter or two in diameter. The surfaces of the large and small intestine and peritoneum are thickly studded with thousands of these pale, yellow tumors.

Heart not remarkable.

Left lung shows small, pea-sized nodules, scattered throughout both lobes. Cut surface shows normal amount of fluid. Nodules are rather tough on section and grayish-yellow in color. None of these nodules are broken down.

The right lung is also studded with these nodules.

The apices of the lungs show no special change.

The spleen weighs 200 grams, is somewhat enlarged, and very hard and stiff. The indentations in the margins are marked. Numerous hard, pale yellow nodules, about 1-3 of a centimeter in diameter, appear on the surface. On section, the spleen is tough and thickly studded with nodules, which project in places from the surface. These are yellow in color; none broken down.

The gall-bladder cantains several friable stones and considerable sand. Attached to the neck of the gall-bladder is a hard tumor, the size of a walnut. On section, it is tough and pale yellow in color.

The liver weighs 1580 grams. Its surface is pale, and studded with nodules, similar to those found in the spleen. On section, the liver is filled with these nodules.

The kidneys weigh 150 grams each. Capsule strips easily. On section, the markings do not show well. The cortex cannot be sharply differentiated from the medulla. The aorta shows a moderate degree of fibrous sclerosis. The head of the pancreas is thoroughly invaded by a new growth which is tough and almost uniformly pale yellow in color. It shows a slight tendency to lobulation in places.

Diagnosis: Carcinoma of the pancreas, with metastases in the liver, spleen, retrosternal lymph glands, and probably in the lung.

Case 6. M. H., age 50.

Family History: Except for the death of a sister by cancer, family history is negative.

Past History: Patient had measles and scarlet fever at sixteen; influenza in 1919.

Present Illness: While in France in 1921, patient's trouble began with digestive disturbance and constipation, thought to be due to inadequate diet. The onset was slow and symptoms indefinite,—at times constipation being the most prominent symptom. His trouble continued up until the present time. Patient was admitted to this hospital September 19, 1921, for observation. Chief complaint at this time was pain after eating, associated with considerable gas in the stomach and constipation.

Physical examination shows a thin, fairly well developed white man, with evidence of marked loss in weight. Eyes, ears and nose are negative. Lungs show some increase in tactile fremitus on the right, with a hyperresonance on the left, from the fifth rib down. There are no other signs of pathology present. Heart is negative, except for slight enlargement of the right auricle. Abdomen is slightly distended, being hyperresonant throughout the epigastric region. There are no masses felt, no areas of tenderness, and no muscle spasm. Kidneys, liver and spleen are not palpable. The knee jerks are equal and active.

September 28, 1921: X-ray of chest shows moderate hilus and bronchial thickening; an occasional calcified nodule noted, otherwise negative.

October 2, 1921: X-ray of the gastro-intestinal tract shows stomach in the median, transverse position; peristalsis slightly increased. Duodenal cap shows some irregularity, consistent in both fluoroscopic examination and in the films. Six hours shows the stomach well empty. Twenty-four hours shows considerable angulation at the hepatic flexure, which appears low. Proximal portion of the transverse colon looped, and appears tied down to the caecum. Head of the barium column being at the descending colon, denotes no obstruction. Seventy-two hour plates give no further information.

October 16, 1921: In the meantime the patient's symptoms remained essentially unchanged as they have since the onset, that is, (1) constipation, (2) two hours after every meal, has a dull, burning sensation in the right hypochondrium, always arising there and then radiating to the left side and downwards. It is not acute in any way; is accompanied by more or less intestinal flatulence. Symptoms gradually pass off after an hour or two. They are no worse after one meal than another, because patient eats so little; avoids meat and vegetables which seem to form gas. Appetite continues to be poor.

Constipation is relieved somewhat by fluid extract of cascara.

October 20, 1921: Symptoms unchanged; feels sure he has lost thirty-five pounds since the onset of the disease. History would seem consistent with pathology in the right lower quadrant. This is backed up by the x-ray finding of adhesions in this region. A barium enema and x-ray shows considerable angulation at the proximal portion of the transverse colon. Under the fluoroscope it is impossible to separate this area of kinking and the caecum.

October 29, 1921: Operation is being considered. Further questioning of the patient gives the history that last July, while at home, he passed a kidney stone. He was x-rayed, and the result was said to be positive for stones in the right kidney. Therefore it is deemed advisable to have the Urological Service study the case further. X-rays show two discrete foreign bodies in the region of the right kidney pelvis, presumably stones. Urine examination shows slightest possible trace of albumin, no sugar, and a few hyaline casts.

November 15, 1921: In spite of the fact that in this case we have definite evidence of stone in the kidney, the present symptoms are very definitely of intra-abdominal origin.

November 16, 1921: Under nitrous oxide anesthesia, an exploratory midline incision was made, and the abdomen opened. There was no evidence of gastro-intestinal obstruction. Gall-bladder was somewhat enlarged; no evidence of stones. In the region of the head of the pancreas, there was present a scirrhus mass, about the size of a fist. Another hard tumor, about the size of an almond, was found above the right kidney. Section was removed from the pancreas mass, and sent to the laboratory. Gauze drain was inserted, and the abdomen closed.

November 21, 1921: Patient's condition remained about the same until 7.45 this morning, when his color suddenly became poor, pulse rapid, and patient died at 9.05. Autopsy permission was not obtained. Laboratory findings are as follows:

"Strands of carcinomatous tissue lying in a strauma of fatty tissue. Diagnosis: Carcinoma, head of pancreas."

CASE 7. C. G., age 34.

Family History: Mother died of "womb or stomach trouble," and father of "kidney trouble."

Past History: Practically negative, up until June, 1916, when he developed digestive symptoms, appearing as nausea and dull, gnawing pain in the epigastrium. These symptoms gradually grew worse, and seemed to appear about two or three hours after meals. He occasionally vomited bile-colored material; very little food in the vomitus. One morning at work, after eating an apple, patient was seized with a severe attack of pain in the epigastrium. He felt weak, dizzy, and fell to the floor. On regaining consciousness, he vomited a large amount of "coffee-ground" material, and also some bright red blood. Patient was taken to the Peter Bent Brigham Hospital, where condition was diagnosed as "Ulcer of Stomach." Gastrojejunostomy was performed on December 7, 1916, at the above-named hospital, for obstructing carcinoma of the stomach. Patient was relieved of all symptoms, gained in weight, and seemed to be in perfect health.

In May, 1918, patient was struck in the lower chest and epigastrium by a swinging breechblock, while dismantling gun, but was not rendered unconscious. Two or three days later, while stooping down to pick up something, he felt dizzy and sick to his stomach, vomited yellow, watery material, followed by about one-half an ounce of bright red blood. Patient was treated at the company infirmary for a few days and then returned to duty. He had occasional dull pains in the lower chest and epigastrium up until June, 1918, when he began vomiting from one to two hours after meals. October 26, 1918, immediately after breakfast, was nauseated and vomited a large clot of dark brown blood, followed again by bright red blood. Operative procedures were recommended while in France, but never performed. In March, 1919, pain again reappeared, more severe than ever before. Patient felt good off and on, but had occasional gastric attacks; appetite was fair, with no loss of weight, but gradual loss of color.

In January, 1920, all symptoms of distress, nausea and vomiting, and pain in the lower left chest and lower stomach region reappeared more frequently than before, with about the same intensity. Pain became more severe in February, 1920.

Patient was admitted to the U. S. Veterans' Hospital No. 36 first on April 5, 1920. At this time he complained of cramping or drawing up of all fingers, both hands, especially little fingers; pains and tightness across the sternal region of the chest. A diagnosis of Dupuytren's contraction of fifth digit, both hands, was made, —improved by operation. Patient also vomited occasionally at this time. He was discharged on October 6, 1920.

On December 16, 1920, patient had another gastric hemorrhage, which was possibly one quart or more in quantity,—"coffee ground"—and which was again followed by blood.

Patient was re-admitted to this hospital on December 18, 1920, with complaints of weakness, dizziness, spots before eyes, nausea, gaseous eructations and the tasting of blood in mouth. The question of ulcer of the stomach was changed to carcinoma of the stomach, based on the findings at operation at the Peter Bent Brigham Hospital in 1916. Patient also showed localized areas of swellings, characteristic of angioneurotic edema. This, however, gave him very little trouble. He was discharged on July 23, 1921, with a diagnosis of Carcinoma of Stomach,—condition much improved.

In September, 1921, symptoms of vomiting and dizziness again reappeared. On September 18th, patient coughed up a large clot of blood, solid and dark brown in color, also vomited a large amount of "coffee-ground" material.

Again re-admitted to this hospital on November 21, 1921. Complaints were practically the same as on previous re-admission. Food was said to have no relation to pain, unless the patient was hungry along with it. He has lost about seven pounds in weight; appetite is poor, but bowels regular; no marked dyspnoea on exertion.

Examination revealed the following:

General appearance: white male, well developed and well nourished. Apparently anemic. Nose: deviation of nasal septum to the right, with a basal ridge on the left and spur on the right. Partial obstruction of the nares. Moderate hypertrophy of the middle turbinate on the left. Mucous membranes normal. Abdomen: tympanitic throughout. No masses or muscle spasm; slight tenderness in the epigastrium. Intestines negative. Liver palpable at costal margin. Spleen and kidneys not palpable. Skin negative, except for a scar extending in the midline from the epigastrium down to within one inch of the umbilicus, from previous laparotomy, supposedly for carcinoma. Bones and joints: the little fingers of both hands show ankylosis of the middle joints.

March 6, 1922: X-ray of gastro-intestinal tract taken on this date reveals the following:

"Six hours after motor meal, fluoroscopic examination shows meal in lower ileum, caecum and ascending colon. These structures of normal contour and position, flexible and movable.

"Liquid meal was given and revealed a stomach of peculiar shape, vertical in position, having a club-like appearance, hypotonic in type. Meal was seen passing gradually, but no duodenal cap was discernible. Lateral view showed meal leaving the stomach through the posterior wall, as if a gastroenterostomy had been performed. The outline of the stomach is irregular, and shows numerous small mouse-eaten filling defects. These are discernible in the immediate plates where the stomach, almost empty, has an hour-glass shape. Twenty-four-hour plate shows trace of meal in caecum, slight trace in transverse and descending colon, remainder in rectum.

"Gastro-intestinal examination is very suggestive of gastric carcinoma."

April, 1922: Patient sleeps fairly well at this time, but still complains of gastric soreness and pains in the chest.

May, 1922: Patient has lost about fifteen pounds in the past two months. He still complains of occasional nausea and eructations of gas and acid fluid. Patient has a definite cachectic look. Examination of the abdomen reveals a definite mass in the epigastrium.

Case 8. W. T. W., age 48.

Family History negative.

Past History: Negative, except for measles, mumps and whooping cough when a child.

Present Illness: Trouble dates back six weeks, when patient ate some canned salmon for supper, followed three hours later by severe cramps over the entire abdomen. He had three definite attacks of cramps, which lasted about fifteen minutes each. Took two doses of castor oil, with no results until the following morning. He had no vomiting, and although he felt bad the next day, he continued his work. Patient has worked every day until about two weeks ago. Following the first attack, he complained of a dull pain and distressed feeling in the epigastrium; was tired out, and felt unable to do his work. This condition continued until two weeks ago, when he began to vomit. Vomiting was followed by a short period of relief. He has not vomited blood. About a week ago patient noticed that his abdomen was beginning to swell. This has increased considerably since. He has none of the old indigestion distress, but suffers considerably from the swollen abdomen. Patient considered himself perfectly well until the onset six weeks ago. He has lost considerable weight in this time.

Admitted to U. S. Veterans' Hospital No. 36, March 17, 1921. Examination as follows:

Well developed and nourished, but has apparently lost some weight. Skin and conjunctivi pale. Eyes, ears, nose and throat negative. Chest and lungs show a few crepitant and subcrepitant râles before and following cough, over both lower lobes, posteriorly. This is more marked on the right side. An occasional crepitant râle can be heard over the right apex. Heart is negative, except for some lateral enlargement. Abdomen distended with fluid. Fluid wave felt; signs of shifting dulness present. A mass, the size of a small grape-fruit, can be felt in the epigastrium. There is no special tenderness and no muscle spasm. Urinalysis shows slightest possible trace of albumin, and a very rare hyaline cast. Blood count shows 3,080,000 reds and 4,000 whites; hemoglobin, –65 per cent; small mononuclears –11 per cent; large mononuclears –1 per cent.; neutrophiles –85 per cent.

March 18, 1921: Abdomen tapped and 2,000 c.c. of straw-colored fluid removed. Blood Wassermann negative. X-ray of the stomach, following a bismuth meal, shows annular carcinoma, involving the antrum and pyloric end of stomach. X-ray of the lungs shows no evidence of metastases.

March 21, 1921: Report of fractional gastric analysis, following Ewald meal, shows no free acid, and a very low total acid. Blood is present in two specimens. Lactic-acid is present in all.

Fasting contents show many squamous epithelial cells; numerous Oppler-boas bacilli. Stomach empty in one hour and one-half. Patient's pulse is very poor, and condition considered grave. Fifteen minims of tincture of digitalis given.

March 24, 1921: Patient sleeps a good deal; no particular discomfort. Report on the ascitic fluid received, and shows a cell count of 990; differential count—large mononuclears -2 per cent.; small mononuclears -13 per cent.; neutrophiles -85 per cent. Specimen negative for tubercle bacilli. Albumin -12 per cent.

April 5, 1921: Patient's condition averaged about the same as usual. Paracentesis of the abdomen was to be considered today. Patient died at 3.10 A. M.

Autopsy performed, and shows the following points of interest:

Peritoneal cavity contains six quarts of ascitic fluid.

The heart is nearly as large as two of the individual's fists. There is a large amount of epicardial fat. Heart weighs 500 grams. The right auriculoventricular valve measures 140 millimeters in circumference; the left auriculoventricular valve, 115; pulmonary valve, 85; aortic valve, 75. There is a moderate degree of fibrous sclerosis in the aortic valve, on the surface of the aortic bulb, and in the coronary arteries. There are no changes in the other valves.

The lungs are essentially negative.

The stomach shows a large mass, the size of the subject's fist, on the anterior wall of the stomach, near the pylorus, extending up onto the lesser curvature. This mass is five inches long, four inches wide and one inch thick. It protrudes into the stomach surface, and has an irregular, cauliflower appearance. It is tough and hard, fairly well circumscribed, but has no capsule. Pylorus is not invaded.

Spleen and kidneys are negative.

The liver weighs 3,050 grams. It is pale, mottled and yellowish. On the right lobe there is a large, shrunken scar. On the anterior lower margin of the left lobe there is a large, pale, hard mass. There is a similar one on the left side of the left lobe. On section, the liver is hard, and shows scattered masses of hard, pale tissue. Some of these measure two inches in diameter.

There are numerous large retroperitoneal glands in the upper part of the abdomen. Aorta shows a moderate degree of sclerosis.

Anatomical diagnosis: Carcinoma of the stomach, with metastases of the liver and retroperitoneal glands. Heart: Myocarditis, dilation, hypertrophy.

CASE 9. A. D., age 48.

Family History: Mother died of nephritis; father of "old age." No tuberculosis, cancer or insanity in the family.

Past History: Patient had typhoid fever twelve years ago; measles and whooping cough. Otherwise he had always been healthy.

Present Illness dates back to August, 1919, when he began to have trouble with his stomach. Was nauseated and troubled with considerable gas formation. In September, 1920, patient was operated upon at the Peter Bent Brigham Hospital for gastric ulcer. On admission to that hospital, he gave a history of pain in the epigastrium for the preceding three months, coming on about an hour after eating; somewhat relieved by drinking hot water. Pain became so steady that during the last month he had very little freedom from it.

Gastric bismuth studies showed a small defect in the lesser curvature, with an irregular duodenum. There was no stasis. No masses could be felt, but there was moderate epigastric tenderness.

Operation under ether. "Stomach presented a most remarkable condition of induration posterior to the lesser curvature, half way from the pylorus to the cardia. Induration on the anterior wall extended one-third way across the stomach, and posteriorly to the great curvature. The mass was firm, slightly boggy, as though a spreading infection of the gastric wall were present. Many glands were involved, inflammatory in character, especially those of the gastrohepatic omentum. Immediate pathological examination showed what at first sight seemed to be a carcinoma, but a frozen section from two places showed nothing but ulcer. This case is considered to be on the border line of a phlegmonous gastritis. Sleeve resection was performed. Postoperative x-ray shows the stomach to be considerably reduced in size, and shows a six-hour residue considerably reduced in amount. The stomach was somewhat sluggish in peristaltic wave, as the barium was going through. The head of the barium column was in the caecum, at the end of six hours.

"Diagnosis: Floor of Gastric Ulcer."

On account of the present complaint of pain and severe constipation, patient was admitted to this hospital for treatment May 13, 1921. Examination on admission was practically negative, except for healed operative scar in the abdomen, marked tenderness on palpation throughout the epigastrium, and a palpable mass.

May 16, 1921: Considerable difficulty in getting patient's bowels to move. Enemas and castor oil given without avail. Blood Wassermann negative.

May 18, 1921: Gastric analysis shows complete absence of hydrochloric acid. Blood was positive in several tubes. X-ray of the gastrointestinal tract reveals a filling defect involving the antrum of the stomach. Pyloric portion of first part of duodenum not filled at any time. Peristalsis lost well up in the fundus. Condition decided to be inoperable.

June 6, 1921: Patient gradually getting weaker, vomiting throughout the day. Vomitus contained "coffee-ground" material.

June 11, 1921: Patient slowly sank into an unconscious state, and died at 9.30 A. M.

Autopsy shows a mass, the size of a large grape-fruit, firmly attached to the lesser curvature of the stomach, to the right, and behind the pylorus. It invades downward, across and around the duodeum and pancreas. On section, this tumor is rather hard, and shows small areas of necrosis. Near the pylorus, on the surface of the inner wall of the stomach, there is a large mushroom-like ulcer, about one and one-half inches wide, with raised edges. This lies opposite the tumor.

Diagnosis: Carcinoma of the Stomach.

. . . .

The cases which follow, are cases of the mesoblastic or endoblastic type, not in themselves remarkable, in the age of the cases affected, but included in this paper for completeness in the study of malignancy in the earlier years, and for the intrinsic interest of certain of the cases.

Case 10. H.K.J., age 29.

Family History: Mother in good health; father died of cancer of the stomach. Two brothers and one sister dead,—causes unknown.

Past History: Patient has always enjoyed good health up until the present illness.

Present Illness: Was taken sick in February, 1920, with a bad cold. Since that time he has been a bed patient, has lost weight and feels tired most of the time. During this period, patient began to have trouble with his stomach in that he had to be careful about his diet, always felt a dull, distressed feeling in the region of his stomach; has always been constipated. He has been having night sweats ever since the onset.

Physical examination on admission, June 1, 1920, reveals a small man, considerably emaciated. Heart negative. Lungs: left apex shows bronchial breathing; a few moist and crepitant râles in the axillary space, from the third rib down. There is a small area of roughened breathing with râles over the base posterior,—at the lower margin of the lungs, about one inch and one-half from the spine. The right lung apex is slightly duller than the left. In the axillary space, at the level of the third rib, is an area about 2 x 1½ inches, which shows rough bronchial breathing, with numerous moist râles. The abdomen is tympanitic, except in the flanks. This dulness is found to shift with position. Fluid wave can be elicited. Recti muscles are rigid, and show muscle spasm. The entire abdomen is tender to pressure. On admission, the diagnosis was that of Tuberculous Peritonitis. Patient is running considerable fever. Urine is entirely negative. Blood count shows 3,900,000 reds; 70% hemoglobin; 11,400 whites. Sputum is negative for tubercle bacilli. Blood Wassermann is negative. Patient runs a temperature from normal up to 103.4. Pulse ranges from 85 to 95.

June 7, 1920: Sputum is negative daily. X-ray of chest shows slight thickening about the hilus. There are many annular areas of increased density, constituted of dilated bronchi and bronchioles.

Conclusions: Findings consistent with chronic bronchitis, with bronchiectasis.

Patient seen by surgical consultant and operation advised after a few more days of observation.

June 11, 1920: Feces negative for blood; show occasional pus cell; no amoebae.

June 17, 1920: On the advice of both medical and surgical consultants, exploratory laparotomy was advised, probable diagnosis being tuberculosis of the peritoneum, and a question of malignancy. Under nitrous oxide ether anesthesia, the abdomen was opened through a midline incision. Many retroperitoneal glands were found, a few of which showed necrosis. Two wicks were placed in the abdomen, and the whole closed in layers.

June 20, 1920: Patient's condition seems to be improving; abdomen draining profusely through the abdominal wound.

June 23, 1920: Patient suddenly took a bad turn last evening and died at 5:00 A. M. this morning. Permission for autopsy was granted. Report follows:

"Large retroperitoneal mass found back of the attachment of the mesentery. This mass has a large necrotic cavity in it, opening into the peritoneal cavity. There are numerous, slightly enlarged mesenteric glands.

"The left lung is attached to the wall by numerous adhesions. The parietal pleura, near the upper part, shows two groups of fungus-like white masses, very hard, but not calcified,—feels like cartilage.

"The lungs are negative for tuberculosis.

"The heart is also negative.

"Stomach—About two inches below the pylorus is a hard scar, about one centimeter in diameter, on the posterior wall of the duodenum. In front of the duodenum, and around the pancreas, is a mass of tough tissue, which on section shows discrete, yellowish areas, mixed with brownish-red areas.

"Liver shows large and small lumps, scattered over the surface, varying in size from one-half centimeter to three centimeters in diameter. They are pale and project from the surface.

"The rest of the organs are practically normal."

Two specimens were sent for laboratory examination to the Hygiene Laboratory, Washington D. C., and the following report given:

"Retroperitoneal gland shows Hodgkin's Disease."

Another specimen was sent to Dr. F. B. Mallory at the Boston City Hospital. His report was briefly as follows:

"Strongly suggestive of gumma. Examination negative for tubercle bacilli. The glands were much enlarged and showed extensive necrosis, but definite cells. It is possible that the lesion was a lymphoblastoma specimen with extensive necrosis, but no definite cells. The subsequent history ought to tell, because in the latter case I should expect the patient to be dead by this time."

CASE 11. W. F. J., age 20.

Family History: Father and mother living and well. Two brothers living and well. No tuberculosis, cancer or diabetes in the family.

Past History: Negative, except for measles, diphtheria, chicken-pox and whooping cough in childhood.

Present Illness: This dates back to February, 1919, when the patient developed a mild attack of influenza, lasting ten days. This was followed by persistent pain in the back and chest. Patient has been in run-down condition ever since. He developed enlarged glands in groin and both axillae a few months after the influenza.

Patient was admitted to this hospital January 29, 1921, complaining of shortness of breath, pain, constant throughout his chest, loss of weight and poor appetite.

Examination showed a fairly well developed, but poorly nourished young man. He presents a small chain of glands, both sides of neck, above the clavicles. There are a few palpable glands in the left axilla, right lobe and both groins. The lungs show slight dullness over both apices posteriorly, with prolonged, harsh respiration; no râles or increased voice sounds. Heart is negative. Abdomen is tender throughout; no masses or spasm present. There is thinning of the right epididymis, non-tender, non-inflammatory. The hands and feet are slightly cyanotic.

February 1, 1921: X-ray of chest negative, except for occasional dense, calcified nodules in the hilus. Blood examination shows 4,900,000 reds; 3,700 whites; 70% hemoglobin; 6% small mononuclears; 35% large mononuclears; 56% neutrophiles; 1% eosinophiles; 2% basophiles.

February 11, 1921: White blood count—2,800.

Patient referred to the Collis P. Huntington Memorial Hospital for consultation as to the advisability of radium therapy. It was their opinion that the condition was definite Hodgkin's Disease, and arrangements were made for treatment.

February 16, 1921: In report of treatment—patient slightly improved.

For the next two months patient continued to lose weight and strength.

August 12, 1921: On account of the low number of red cells and the general appearance of marked anemia, patient was transfused, and 500 c.c. of whole blood given. Examination at this time reveals a mass, about the size of a small grape-fruit, in the left hypochondriac region, irregular in outline and slightly tender to palpation.

For the next week or so condition remained practically unchanged. Blood picture has improved, but patient has had several chills.

August 27, 1921: Tranfusion of 500 c.c. of whole blood.

September 3, 1921: Transfusion of 600 c.c. of whole blood.

After each transfusion patient's blood picture improved, but there was no definite improvement in the general condition. He continued to grow weaker, and died November 14, 1921.

Autopsy performed.

"There is a large retroperitoneal mass extending up to the edge of the ribs and down to the level of the anterior superior spine.

"Lungs are practically negative, except for the appearance of several glands throughout the hilus.

"Spleen is over nineteen centimeters long, ten centimeters wide and six centimeters thick. It weighs 510 grams. It is very dark in color, rather soft in consistency, and on section shows large prominent corpuscles.

"In the region of the spinal column, behind the peritoneum, is a large mass, 170 centimeters long, 130 centimeters wide and about 70 centimeters thick. It is lobulated bi-laterally with a groove down the center. The top of the mass is at the level of the seventh rib, and the lower edge at about the level of the umbilicus. The mass is firmly fixed to the posterior wall. It cannot be peeled, and must be cut away. This mass is made up of a group of very much enlarged lymph glands. It weighs 790 grams.

"Diagnosis: Hodgkin's Disease."

CASE 12. G. H., age 22.

Family History: Father's mother died of cancer of the face. Father's father had a growth of the lip removed.

Previous History: Negative, except for diphtheria, measles and mumps.

Present Illness dates back one year. Onset with pain in the lumbar region. Consulted doctor, who strapped his back. Pain was relieved for about seven months, and then began again. It was worse at night, and in October, 1920, became severe. Patient went to the M. G. H. Out-Patient Department, for treatment. There he had two casts applied. Pain remained in the lumbar region, and never radiated. In the latter part of November, his back became so stiff that he could not bend over. Condition was diagnosed as chronic arthritis, and was later thought to be tuberculosis of the spine, and treated as such. After the last cast had been applied, patient began to have pain over his hips; noticed that his feet and legs felt heavy on getting up in the morning. This gradually increased. He removed the cast, and at the same time noticed a loss of muscle power in the legs. He began to lose sensation from the waist down. This gradually increased, until about ten days ago, when he was completely paralyzed. Two days later he lost control of the bowels. About five days before admission to this hospital, he had to be catheterized, and at the same time noticed that he had a small lump on his back, to the left of the spine, near the point of the scapula. It increased in size, and then went down some, later becoming larger than ever.

Patient was admitted to this hospital March 28, 1921, chief complaint being pain in the back, paralysis of motion and sensation from the ribs down, and incontinence of urine and feces.

Examination on admission revealed a fairly well developed and nourished man. Heart showed a loud systolic murmur heard over the entire chest, best over the base of the heart. Lungs showed slight dulness over the right apex. Flatness noted over the left base, posterior from the fourth dorsal spine down. Breath sounds are normal, except over the flat area in the left base. Here they are absent. Whispered voice also absent here. Abdominal wall looks otherwise negative. Patient presents a complete motor and sensory paralysis below the tenth dorsal nerve. All reflexes absent below this point. He has no control of sphincters. Patient presents marked tenderness from the third to the ninth dorsal spine. To the left of the spine, at the level of the sixth vertebra, is a swelling about the size of a goose egg, which is firm and quite tender. Blood Wassermann is slightly positive. Blood count shows 4,800,000 reds, 7,200 whites; 75% hemoglobin.

April 1, 1921: The swelling on the left back explored with needle. Nothing found.

April 15, 1921: X-rays of the chest and spine show as follows:

"The thoracic vertebrae appear clear-cut and distinct, apparently not diseased."

April 29, 1921: Patient vomited large quantities of dark-colored fluids. The stomach is greatly dilated, filling most of the abdomen. Several small masses can be felt in the abdomen, at times one in the epigastrium, and several lower down.

May 3, 1921: Patient slightly improved, having recovered from the dilated stomach. He is considerably weaker.

May 7, 1921: Patient's pulse became poor, was cold and cyanotic, and died at 3:15 A. M.

Autopsy:

"Lower lobe of the left lung is firmly attached with adhesions throughout. There is a small amount of fluid in the left pleural cavity.

"The heart showed a congenital stenosis of the pulmonary valve, with hypertrophy of the right ventricle.

"Left lung: the lower lobe of the left lung, on its outer surface, feels hard and not at all crepitant. The upper lobe, on section, is pale, and no fluid drips from the surface. The lower lobe on section is like liver in consistency, dark purple in color, and a small piece sinks in water. The pleura in this region is about one-quarter of an inch thick. The lung pleura and tissue behind the left lung, are thoroughly grown together. In the midst of this mass is a large tumor, nearly three inches across. On section it is dark purple in color, rather soft and watery, and has invaded the vertebrae behind.

"The other organs are not remarkable, except for the tumor which seems to have invaded the cord, at the level of the ninth vertebra. On the dorsal aspect of the cord, the tumor runs from the top of the tenth to the bottom of the seventh dorsal spine. This is about as wide as the cord, about two and one-half inches long and one-quarter of an inch thick. This tumor is firmly adherent to the dura, but can be dissected off; the dura itself, apparently not being invaded. The tumor does not involve the cord, but on cross sections the markings of the cord are not as clear in the region of the tumor.

"Diagnosis: Round Cell Carcinoma."

No differentiation can be made between sections of the tumor removed from the dura of the spinal cord and those taken from the pleural cavity. The tumor is extremely vascular, blood vessels being in all stages of completeness. The tumor mass is made up of small, round cells, which are massed together heavily. Occasionally the cells are grouped, as to suggest an alveolar arrangement.

Case 13. J. J. C., age 29.

Family History negative for tuberculosis, cancer or insanity.

Past History essentially negative.

Present Illness: While in service at Camp Dix, N. J., August, 1918, patient states that he was struck in the right shoulder by the kick of a rifle. Three days later he developed a swelling at the base of the neck, on the right side. He had no pain, but the tumor gradually enlarged and interfered with his wearing of a collar. In May, 1921, patient became alarmed at the continuous growth of the tumor and went to the Massachusetts General Hospital, where he had the neck glands excised. Eight weeks ago patient noticed a lump in the right axilla, and was admitted to this hospital September 6, 1921, for this condition. Abstract from the Massachusetts General Hospital records show the following: "May 3rd—operation and biopsy. Gland, the size of a marble, excised from the left side of neck. Microscopic examination shows a neoplasm composed of eight typical cells of the lymphocyte series. There is a marked fibrosis with eosinophilia. Masses of giant cells with multiple nuclei are conspicuous.

Diagnosis: Malignant Lymphoma.

May 11 operation,—excision of glands of neck. Tumor mass, the size of a baseball, was removed. Examination of this tissue revealed the same histological picture as on May 3rd."

On admission to this hospital, patient had no complaint, except the presence of the tumor.

Examination disclosed a moveable, firm tumor mass, about three centimeters in diameter. The rest of the examination was negative.

September 14, 1921: Blood examination shows 4,872,000 reds; 7,800 whites; 85% hemoglobin; 9% large mononuclears; 14% small mononuclears; 10% transitionals; 1% eosinophiles; 75% neutrophiles. Urine examination—negative. Blood Wassermann—negative.

September 16, 1921: Radical excision of all glands of the axilla was performed. Wound healed by first intention. Microscopic examination of the tissue removed shows invasion of the lymph node by many small cells which have a very dark stained nucleus. These cells replace the normal lymph structures in many places. Growth is so rapid that many cells are necrotic.

Diagnosis: Malignant Lymphoma.

Patient made an uneventful recovery and was discharged from the hospital on October 25, 1921. There was no evidence of metastases at this time.

Case 14. P. DeF., age 27.

Family and Past Histories are negative.

Present Illness: In June, 1920 patient's brother states that the patient appeared rather sleepy most of the time. He would often fall asleep when not busy at work, but seemed in good health at all other times. During the latter part of August, 1920, the right eye began to close up. About the middle of September the left arm became so weak that articles would slip out of his hand. About two weeks later patient noticed that the left leg also became weak. This condition gradually increased. At present he is unable to stand or walk, cannot sit up, speech is blurred and has difficulty in swallowing.

Examination on admission to this hospital, December 24, 1920, reveals the following:

Eyes: Ptosis of right upper lid. Eyeballs practically fixed; very little lateral movement possible. Pupils of medium size; react easily to light and distance. Ears negative. Hearing considered normal. Mouth: Tongue protrudes to the left on extension; the lips to the right, when patient shows teeth. Throat: Soft palate moves a little; otherwise negative. Face: Brows wrinkle well,—better on the right than on the left. Left side more flaccid than right. Chest: Heart normal. Lungs: negative, except for a few râles in the right axillary space. Abdomen negative. Reflexes: Babinski and Oppenheim negative. Slight ankle-clonus present. Suggestion of Kernig. Hyperactive knee reflexes. Left leg and arm spastic; no muscular movements possible. O. D. practically obliterated; veins distended, some exudate. O. S. much obliterated; can be seen partly on the temple side; veins distended, some exudate. Blood pressure: Systolic—122; diastolic—80.

January 5, 1921: Examination by the ophthalmologist reveals choked disc and complete ophthalmoplegia, both eyes. A tentative diagnosis of brain tumor, involving the brain stem, was made. Spinal fluid on this date is negative for the Wassermann reaction; blood count practically normal.

From the time of admission until the time of death on January 12, 1921, patient was in practically a semi-conscious condition.

Autopsy was performed, with findings in brief as follows:

There is nothing remarkable about the inner surface of the skull or about the surface of the dura. The brain weighs 1580 grams. On section, the brain reveals tumor on the right optic thalamus. The most ventral section appears merely slightly pinkish. Gradually the color becomes darker red and the consistency softer, and finally a short distance ventral to the pulvinar, the tissue is completely broken down into a dark grayish mass. This broken-down mass is surrounded by a tough gray wall, about one millimeter thick. The ventral two thirds of this abnormal structure is not sharply separated from the normal tissue of the thalamus, but gradually merges into it. The whole interior of the thalamus is involved, leaving a shell of apparently unaffected tissue on the outside, about one-half centimeter in thickness. Microscopic section reveals numerous glia cells with varying amounts of fibrous tissues, very vascular.

Diagnosis: Glioma of the Optic Thalamus.

TUBERCULOSIS OF THE BREAST, WITH THE REPORT OF TWO CASES.

By P. H. Leavitt, M.D., Brockton, Mass.

One of the rarest forms of tuberculosis with which we have come in contact is that of infection of the mammary gland. About 200 cases have been reported, and these by a large number of operators. Undoubtedly more cases have occurred and remain either unreported or not recognized.

It was first reported about 1829 by Sir Astley Cooper, who described the gross appearance of the lesions and referred to it as "scrofulous swelling of the bosom," concluding his paper with the following—"they produce no dangerous effects and do not degenerate to malignancy. They do not require operation and indeed it would be impossible to remove them."

Lancereaux in 1860 was the first to make a diagnosis from the examination of the histological structure of the part removed. Dubar in 1881 was the first to describe the microscopical appearance of the pathology. He described the two types which we see today and named them nodular or discrete, and confluent.

Durante and McCarthy[2] of the Mayo Clinic reported in 1916 an incidence of .51% over 11 years, in relation to other pathological conditions of the breast. Baer and Reis[3] in April, 1921, reporting a large series of breast infections, found no involvement by the tubercle

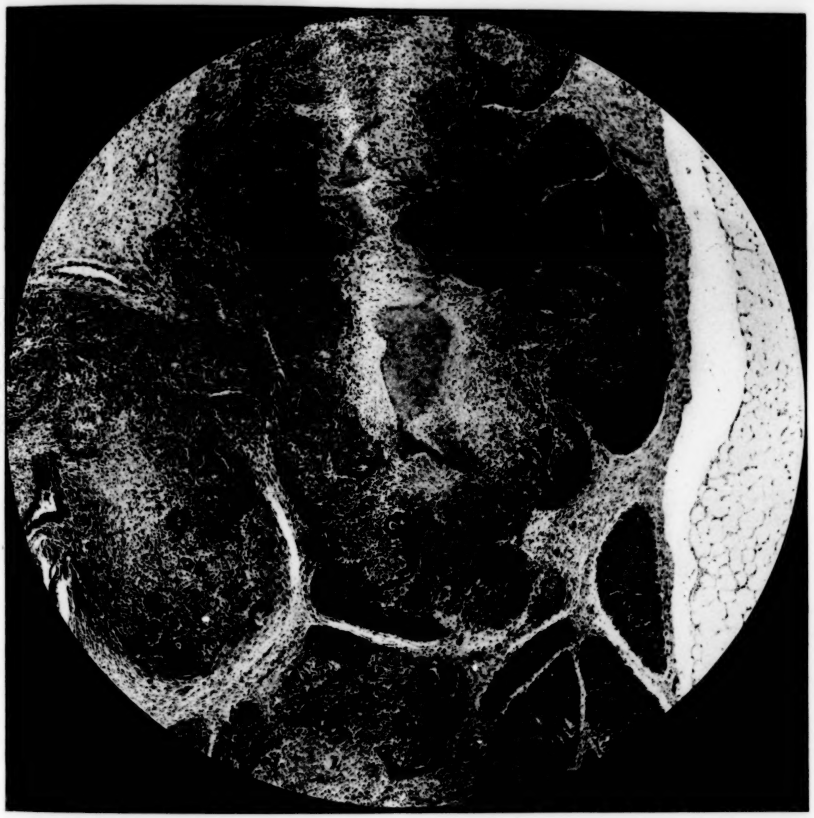

FIG. 1. Case 1. Low Power. Light area shows caseation in glandular tissue. Darkened area shows normal gland.

bacillus. Cheever[4] in 1921 reported four cases in a total of 228 breast cases at the Peter Bent Brigham Hospital, since 1913, an incidence of 1.7%. Deaver and McFarland[5] report an incidence of less than 1%. Scott[6] of London in 1905 found the occurrence 1.3%.

The mode of infection is subject to dispute. Gatewood[1] believes that the infection is secondary to a retrograde lympathic involvement from the axilla or from a primary focus in the lungs *via* Grossman's path and Rotter's lymph nodes, and advances as proof the fact that so far a case of tuberculous breast has not come to autopsy with tuberculosis confined to the breast. Of course it is true that practically every death that comes to autopsy shows evidence of tuberculosis either in lungs or abdominal cavity, so the above proof is not necessarily correct, though the assumption of that origin is reasonable.

The cases reported are as a rule in apparently healthy condition, though one of our cases was in a woman of tired, emaciated appearance. Trauma does not seem to bear a definite relation to the disease. Age is variable, though very few cases are reported after 45, none below 20. The sex incidence is predominantly female.

In involvement of other superficial glands by tuberculosis, entrance by way of, first—blood, second—lymph stream, third—by direct extension, is admitted. There are four ways in which the invasion of the breast might occur. The disease may enter the breast in any of the above ways, or it may enter through a cracked nipple, though I believe this last is the most unlikely. As in other glands, the source of invasion may vary and each case should be judged by the general picture and of course the local findings.

The general appearance of the nodular or

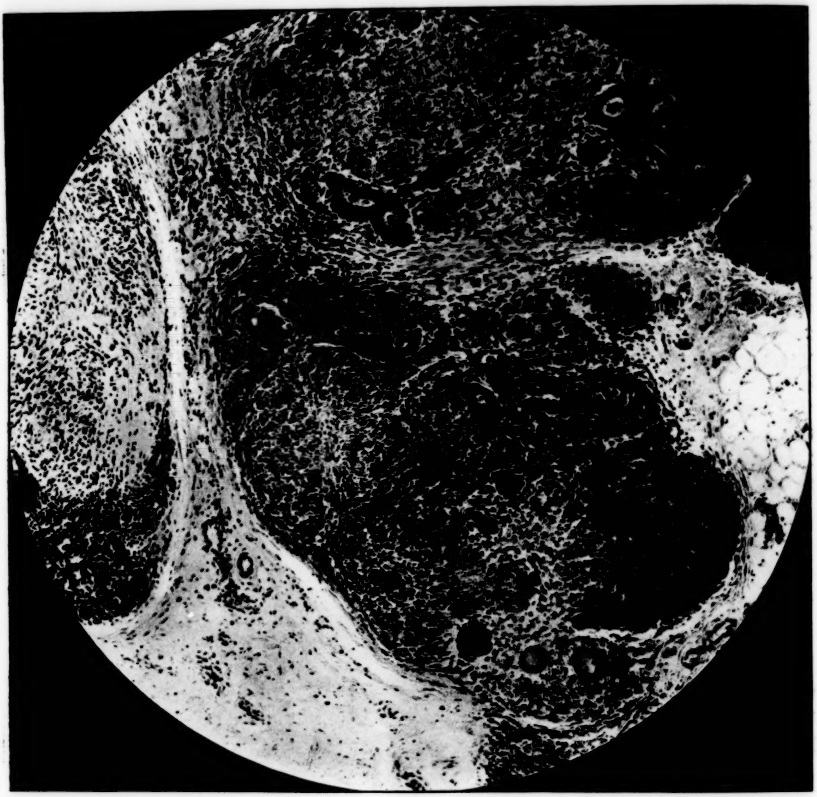

Fig. 2. Case 1. Medium Power. Upper right—normal gland; beneath—the lymphatolytic infiltration and two giant cells.

discrete type is that of a small lump in the breast. Halsted and LeCount found the lesion in the upper outer quadrant. The rest of the literature rarely mentions any special portion of the gland attacked. When seen early the gland is movable, the skin over it soon presents a pig-skin like appearance and later redness and fluctuation may appear. As these signs appear the lesion becomes more immobile. The nipple may be retracted early or late. Glands in the axilla are about equally present or absent in the early stages. The growth of the lump is slow and painless, and as it increases the involved area may break down, then pain, soreness and fluctuation may appear. Then, too, the involvement of the axillary glands is more marked, ranging from 70–80% of cases. The involvement of the axillary glands made early observers positive that the disease was always primary in the axilla. They probably missed the disease in the breast entirely until it became larger. It would obviously be noticed earlier in the axilla.

The differential diagnosis is of course, first, from carcinoma. More often than not it cannot be made except at operation. Several breasts have been removed and axillae dissected because of uncertainty even at that time. It is common to find in both cases, retraction of the nipple and painlessness. Carcinoma is, however, usually faster growing; but this point alone is of course not enough for a diagnosis.

Adenofibromata are slow growing and painless and when they have undergone cystic degeneration, the result resembles the changes which take place often in tuberculosis of the breast. In differentiating, however, the tubercular nodules are not so freely movable, because of the fibrous tissue which surrounds them. Then, too, involvement of the axillary glands is common with tuberculosis of the breast, but never with

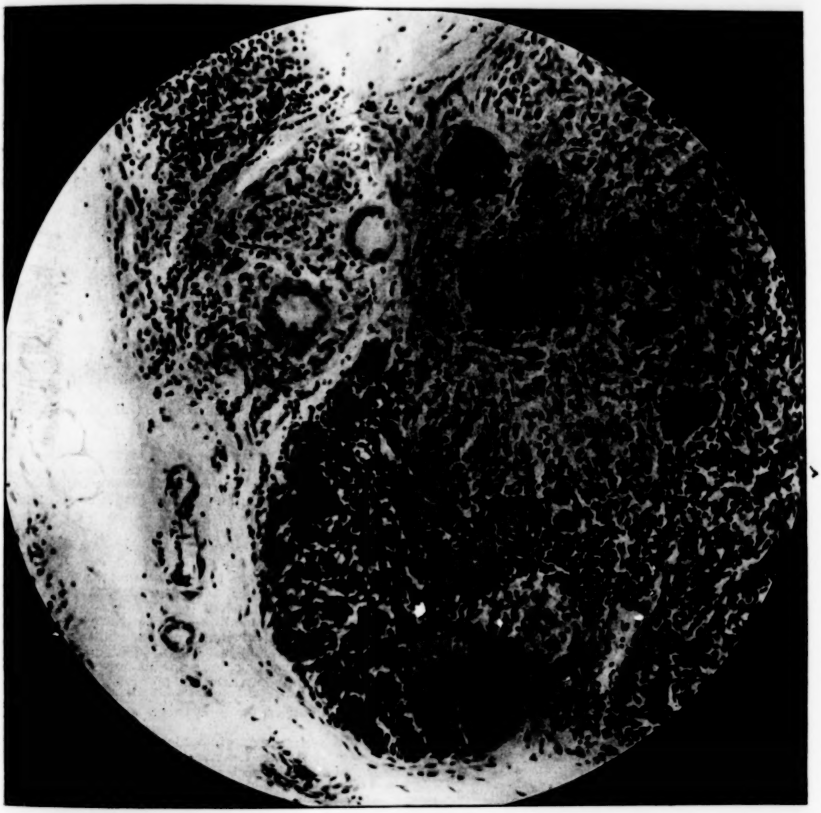

Fig. 3. Case 1. High Power. Dark area shows glandular tissue with lymphatolytic infiltration; two giant cells to right of center.

adenofibromata. Simple pyogenic infection is more rapid and with a more definite history of a lactating breast or trauma.

Sarcomata are more rapidly growing than the nodular type. Actinomycosis, gumma of the breast, echinococcus cyst, sporotrichosis, are remote possibilities and can practically be ruled out by a careful history.

The general appearance of the confluent type is more readily recognized. The breast appears very large and seems to be completely involved, although not symmetrical. The growth is more rapid and there is more tenderness. In these cases too there is practically always a history of pre-existing tuberculosis in the lungs, pleura or neighboring structure of the chest wall; this being a very important aid in diagnosis.

The treatment in the discrete or nodular type is to remove the nodules if limited to one focus. If more than one, it is safer to remove the breast. In the confluent type an amputation of the breast and dissection of the axilla is the best treatment.

Of course if in any case there is an incurable primary condition, then operative measures of any sort are not indicated.

There is no record of treatment by the x-ray, but with the excellent results being obtained by the roentgenologist there is every reason to believe that all the stages of tuberculosis of the breast can be helped.

1. No. 3069 X. Female. Married. Age 39. Entered the Goddard Hospital office clinic, complaining of a lump in the right breast about 5 months. No increase in size, not tender. Youngest child 2 years of age, never any real trouble with breasts while nursing.

Physical examination: A rather thin, undernourished woman. No glandular enlargement, except local. Heart normal. Nothing abnormal noticed in lungs. Locally there is a hard, smooth-feeling lump, about size of walnut, under the nipple of right breast. The nipple is retracted, but there is no discharge. This lump is not freely movable, and no glands can be felt in the axilla. A diagnosis of cancer of the breast was made, and operation was advised. At operation (by Dr. P. H. Leavitt) the breast was removed and the lump sectioned. It appeared very suspicious so the axilla was explored and several small glands were removed at this dissection. The wound healed by first intention and the patient made an excellent recovery.

Dr. F. B. Mallory reported tuberculosis of the breast.

Six months later—patient writes that she is feeling fine. Able to work without getting unusually tired. Appetite good. Request for x-ray (free) refused on the ground of being too busy.

2. No. 3233 and No. 3381. Female. Married. Age 24. Entered the Goddard Hospital office clinic, complaining of a bunch in the right breast, 2 years' duration. Has a child 3 years old, but remembers no trouble with her breast while nursing.

Physical examination: A healthy-appearing woman. No glandular enlargement other than local. Heart normal. Lungs, nothing abnormal found. Local, a good-sized tumor freely movable, 2 x 3 inches in diameter, nodular, axilla negative. Other breast negative.

Operation (by Dr. S. W. Goddard) showed an abscess cavity in the mid breast containing 1½ ounces of yellow non-odorous pus. The cavity was well defined, and the tumor disappeared. Culture showed a weak growth of staphylococci. The wound never quite healed but the patient did not appear again until 3 months later, at which time the breast presented a tumor similar to the first and numerous small discharging sinuses very typical of tuberculosis.

Operation (by Dr. S. W. Goddard) this time showed a tuberculosis of the breast. The latter was completely removed. There were no palpable glands in the axilla and a dissection of the latter was not done.

The x-ray of her chest by Dr. F. G. Wheatley was as follows: "There is a slight amount of peribronchial infiltration at the right apex, consistent with tuberculosis. The area involved is limited. The shadows are rather dense, indicating, probably, a long-standing lesion which may be quiescent."

The pathological report by Dr. F. B. Mallory was tuberculosis of the breast. The patient made an excellent postoperative recovery, the wound healing by first intention, and has had no trouble there since.

SUMMARY.

1. One of the rarest forms of tuberculosis.
2. Source of infection variable.
3. Diagnosis often difficult between carcinoma and tuberculosis.
4. Operation gives excellent results—type of operation depending on type of infection.

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DISCUSSION OF DR. LEAVITT'S PAPER.

Dr. F. B. Mallory, Boston: The following are some statistics from the laboratory of the Boston City Hospital, which may be interesting. During the last 25 years we have had 2,297 breasts for examination. The analysis shows 986 cases of carcinoma, included in which are 26 of the colloid type, and 11 of the epidermoid type. Ordinary adenomas numbered 358, chronic mastitis 674, abscesses 27, tuberculosis, including the two cases which Dr. Leavitt mentioned, 14; all other lesions 238, among which there were two cases of echinococcus cyst and one of actinomycosis. The percentage of the cases which were tubercular was 0.6. Our record is just a little lower than Dr. Leavitt's. Both of Dr. Leavitt's cases are fairly chronic lesions with a good deal of fibrous tissue production. From one of them no tissue was available for bacteriologic examination. In the other one, although I stained sections very carefully I was unable to demonstrate any tubercle bacilli although the lesion was perfectly typical, and there was no question about the diagnosis.

Tuberculosis is sometimes associated with tumors of the breast, and carcinoma is occasionally complicated with the lesion just as in other parts of the body. Recently we had a case of adenoma in a breast which had lactated within six months. At the edge of the adenoma were several miliary and small conglomerate tubercles, some of which were invading the tumor.

The three main ways in which the breast becomes infected are, as Dr. Leavitt has mentioned, first, by direct extensions from lesions in the lung. In actinomycosis of the lungs the disease is well known as prone to invade the surrounding bones such as the vertebrae and the ribs, and to extend into the soft tissue beneath the skin. This is very rare with tuberculosis. The second way is by the lymphatics from the axillary lymph nodes. The third method is through blood infection. This seems to be the most common way, and this case I referred to as involving an adenoma would seem to be of that type, as there was no other sign of tuberculosis in the breast.

Dr. R. B. Greenough, Boston: The figures I have been able to gather confirm those given by Dr. Leavitt and Dr. Mallory, in regard to the frequency of this disease. In the last fifty years there have been twenty-five cases in the surgical service of the Massachusetts General Hospital, and in the last few years we have had about one a year. Not all of these, however, can be regarded as tuberculosis of the mammary gland, but must be considered as cases of tuberculosis in the region of the breast, as in cases of tuberculous osteomyelitis of the rib. Many of the cases I have seen have shown involvement of the axillary lymph nodes prior to the recognition of the disease in the breast, and I have therefore believed that infection through the lymphatics was more frequent than has been suggested by Dr. Mallory.

I have seen one case in which direct infection of the breast by use of a handkerchief to wipe the nipple in a patient with pulmonary tuberculosis, appeared to be the starting-point of a tuberculous infection of that region. As a rule tuberculosis of the breast presents definitely a picture of an inflammatory lesion with discharging sinuses. An early case of the nodular type, however, may easily be mistaken for carcinoma, and the co-existence of carcinoma of the breast and tuberculosis in other regions occurs often enough to make the diagnosis very difficult. Other inflammatory diseases of the breast, especially the so-called "Mastitis Obliterans," or suppurative inflammation of the ducts, following a low-grade infection after lactation, may produce a condition which is clinically, and even under the microscope, readily confused with tuberculosis.

Dr. Leavitt: In regard to the feeling that the infection comes from the axilla, *via* lymphatics, don't you think it is possible that the patients would notice a lump in the axilla before they would notice one in the breast? Might it not have been in the breast for quite a long time before arm movements would be such that it would be noticed? This has been advanced by several as more in favor of a blood-stream infection.

Etiology of Sterility in the Female, from an Analysis of 500 Case Records.

By Donald Macomber, M.D., Boston.

We believe that an inquiry into the etiology of sterile matings is necessary to correct certain misapprehensions which seem to be very generally current. A survey of the standard text books on gynecology shows that the whole subject is still chaotic. In the first place, I think few physicians realize that about one out of every ten marriages fails to produce living, healthy offspring, and hence must be classed as sterile. Again, few realize the number of essentially male sterilities. Our own experience has convinced us that fully 50% of all sterile matings are the result of trouble on the male side. These facts are surprising, but no more so than those which come to light on a critical survey of a large number of cases where the trouble is on the other side. The text books, besides largely neglecting the subject of male sterility, tend to classify all female sterilities from the point of view of disease alone. It is true that most books recognize the fact that faulty development may play a part, and that general condition is a factor, but these considerations are minimized and the stress is laid upon the diseased conditions supposed to be causative. Furthermore, no one, as far as we are aware, has tabulated the frequency of the various conditions as they appear in a large series of cases.

The records from which these figures have been taken comprise a series of somewhat more than five hundred cases. Many of the records are incomplete and many are of cases of male sterility. After subtracting those records unavailable for our purpose there are left three hundred and thirty-seven cases. While this series is of course not large enough to warrant any rigid deduction it is, I think, sufficient to outline in a broad way the distribution of causes of sterility as seen in the human female. Many of these cases have more than one condition present which might be considered as having a bearing. In such cases an attempt has been made, for purposes of classification, to pick out that particular cause which seemed of the most importance; but with even the greatest attention to simplification, a list of such causes included more than fourteen items.

Before proceeding to a detailed analysis of the various causes of sterility a few words are necessary about what we may call the "mechanism of sterility." Normally, the semen after ejaculation remains in the vagina as a definite pool into which the cervix projects. There is probably also a certain amount of suction as, however soon after coitus patients are examined, spermatozoa are found in the cervical canal. During coitus there is an outpouring of the cervical secretion which helps to neutralize the acidity of the vagina, and offers an easy path for the spermatozoa in their progress into the fundus. There is probably also an increase in the secretion in the uterine cavity which serves the same purpose. Normally, many spermatozoa reach this cavity and it is probable that a good many eventually succeed in passing into the tubes where the ovum is met. There is, I believe, one case on record where living spermatozoa were found in the tubes some two weeks after coitus. We have found spermatozoa living in the cervical and uterine secretions six days after coitus with their vitality apparently unimpaired.

Now with this brief resumé in mind let us see at what point our so-called "mechanism of sterility" becomes operative. In the first place, an excessive and over-acid vaginal secretion may, in the absence of suction by the cervix, rapidly kill all spermatozoa coming into contact with it; but while this may often be of great importance as a secondary factor, we believe that the factor of primary importance is the condition of the cervical secretion. Here we are confronted with two factors either one of which may be of the greatest importance. The first is a mechanical alteration of the secretion which we have spoken of as inspissation. Instead of having the consistency of white of egg the secretion becomes thick, tenacious, and clouded with leucocytes. Such a secretion impedes the progress of the spermatozoa and eventually all become entangled in the ropy mucus. It is caused by anything that interferes with free drainage from the external os. By far the most frequent of these conditions is the underdeveloped, anteflexed cervix, with small or even pinhole opening. The second factor is infection. A typical infected cervical secretion is made up of muco-pus and is usually associated with a certain amount of erosion of the cervix. In such a secretion the spermatozoa are not only entangled, but are actually killed by its poisonous nature. Following along the course which must be traversed by the entering spermatozoa we come next to the uterine cavity. Here it is not usual to find secretions particularly altered except as they may drain down from infected tubes, in which case they will have a lethal action similar to infected secretions in the cervix. There may be, however, alterations in the uterine mucosa due to subinvolution or other causes unknown, leading to hypertrophy and eventually interfering with the normal nidation of the developing embryo. In the tubes there may be various inflammatory changes varying from a thickening of the mucosa to absolute closure; or there may be inflammatory changes arising outside the pelvic organs themselves which by means of a pelvic peritonitis seal over the fimbriated opening from outside. Such a condition most commonly follows an acute appendicitis.

Hitherto we have dealt with causes and conditions interfering with, or preventing, the normal progress of the spermatozoa. It must be borne in mind, however, that the production of ova is equally important to the development of an embryo. There are two common conditions which interfere with the normal functioning of the ovary. The first is seen in its end-results as the so-called retention cyst ovary. Such an ovary, instead of containing one large Graafian follicle with its maturing ovum, and only a few much smaller follicles not yet at the stage of rapid enlargement, contains numerous small, thin-walled cysts with no demonstrable remains of ova. There is usually a thickening of the tunica albuginea. Whatever the cause of this condition it is certain that in its end-result it represents a non-functioning ovary.

The second condition interfering with normal functioning is the undue persistence of a corpus luteum. Normally, unless pregnancy has occurred, the corpus luteum should be retrograding by the time of the succeeding ovulation, and it is probable that it is the function of the corpus luteum to control the growth and development of the Graafian follicle. It is easy to see, if this theory is correct, that the persistence of a corpus luteum might prevent ovulation. It is to be remembered that ovulation and menstruation are two separate and distinct functions and that either may occur without the other, hence the regular occurrence of normal menstruation is no proof that ovulation is taking place. There are often no symptoms to call attention to either of these conditions in the ovary, and it is only on careful examination under an anaesthetic that the enlargement of such ovaries becomes apparent.

Having now outlined our view of the "mechanism of sterility" a word should be added on congestion. The pelvic organs of the female normally become congested with a consequent outpouring of their secretions at the time just preceding the catamenia and during coitus, but anything which tends to make congestion chronic may have a very deleterious effect. In chronically congested organs the blood-vessels are engorged; there is an excessive cervical secretion; the uterus is large and heavy, and the ovaries are distinctly enlarged and tender to the touch. The persistence of this condition may interfere with the cervical secretion because of the liability to infection; it may interfere with nidation, or it may interfere with ovulation. Congestion may be caused by excessive coitus, or equally by sexual deprivation, or by anything, such as retroversion, fibroids or adhesions, which interferes with the normal venous circulation.

To summarize this conception of the "mechanism of sterility" we may say that we have certain organs taking part in a complex physiological process and that when anything interferes with this process the whole mechanism may be thrown out of balance. It is the classification of the various disorders which may affect this process that we are attempting in this paper.

Table 1.

PATHOLOGIC CLASSIFICATION OF FEMALE STERILITY

Closed tubes	19%
Tubercular tubes	4%
Endocervicitis	5%
Endometritis	2%
Retroversion	11%
Fibroids and miscellaneous	8%
Simple congestion	4%
Anteflexion	19%
Double uterus, etc.	1%
Infantile uterus	4%
Anteflexion and ovaries	8%
Retroversion and ovaries	3%
Ovaries alone	8%
Age, diet, menopause	4%
	100%

This table shows the frequency of the various pathologic lesions met as the principal diagnoses in 337 cases of female sterility.

Let us then examine the actual statistics of these three hundred and thirty-odd cases as given in Table 1. At first sight the most striking thing about this table is its complexity. It is difficult to see any simple relationship between its various items. A reference to the physiology enables us, however, to bring a little order out of this chaotic material; and further study, having in mind the useful conception previously elaborated of a "mechanism of sterility," enables us to still further simplify. This process of simplification is indicated in Table 2, and if carried on to its logical conclusion gives us Table 3.

It does not seem profitable to consider the separate items given in Table 1, in any great detail, and I shall not attempt to do so. There are, however, a number of very practical lessons which may be derived from this study, and these it seems worth while to indicate very briefly.

The striking thing about the inflammatory group is that there are only two regions in the genital tract of the female where inflammations

Table 2.

COMBINED CLASSIFICATION

Inflammatory group (closed tubes, tubercular tubes, endocervicitis, endometritis)	30%
Congestive group (displacements, e.g. retroversion; new growths, e.g. fibroids; lacerated cervix, etc.; and simple congestion)	23%
Developmental group—poor drainage (anteflexion, double uterus, infantile uterus)	24%
Ovarian group (simple ovarian, and ovarian associated with anteflexion or retroversion; age, diet, premature menopause	23%
	100%

This table shows the transition between the pathologic and the functional classifications of the causes of female sterility.

Table 3.

FUNCTIONAL CLASSIFICATION OF FEMALE STERILITY

Inflammatory	30%
Congestive	23%
Developmental	24%
Ovarian	23%
	100%

This table shows the various causes of sterility regrouped on a functional basis and reduced to the lowest possible terms.

are apt to cause sterility. These are the cervix and the tubes. The text books attribute most of these inflammations to gonorrhoea, and in the class of cases seen in the hospital clinics this is probably true. Curtis* of Chicago has reported a series of 300 cases of salpingitis from his hospital clinic. Gonorrhoea appeared as a cause in 70% of these cases, pyogenic organisms in 15%, and tuberculosis in 5%. Many of his cases were complicated by the presence of the colon bacillus. In the sterility clinic at the Massachusetts General Hospital a similar high percentage of gonorrhoeal cases has been found. In our group of private patients gonorrhoea plays a very small part, and most cases seem to be due to infection with some other organism. The explanation of this difference between hospital and private patients seems to lie in the undoubted fact that patients of the latter class are less subject to infection from neglected gonorrhoea in the male.

Pyogenic organisms are not normally present in the vaginal flora, at least in an active state, but they must often be introduced in coitus. Anything tending to lower the resistance might be enough to allow them to multiply. The wonder really is that such chance infections of the tubes are not more frequent than they are. Appendicitis is undoubtedly responsible for many cases of pelvic peritonitis, often involving the tubes. Old, unrecognized tuberculosis of the tubes was found in 12 of our cases; in other words, 1 out of every 6 cases of closed tubes was tubercular. This may be exceptional, but it is certain that tubercular salpingitis is a much more frequent cause of sterility than has been previously supposed.

The congestion group is, as its name implies, a collection of more or less unrelated lesions as far as the actual pathology is concerned, but which all have this in common,—that they produce sterility if accompanied by congestion, and not otherwise. Retroversion in itself, unless adherent, is harmless and it is only when the symptoms of congestion, namely, backache, bearing down sensations, and leucorrhoea, are present that it plays a part in the causation of sterility. Similarly, fibroids, however dangerous they may be to the pregnancy, do not as a rule interfere with conception unless of large size, or so situated as to materially interfere with the uterine circulation. The third item under the congestion group I have designated as simple congestion. By this term I mean the congestion which arises from long-continued sexual excess, deprivation or irregularities of habit. While this condition appears alone in only 4% of our cases it must be understood that it was a factor in a very large number of cases classified under other headings. It must also be recognized that when the organs are in a chronic state of congestion they are much more susceptible to infections both of the cervix and of the tubes; furthermore, we have come to believe very strongly that chronic congestion has an effect on the ovaries which may ultimately inhibit ovulation.

The developmental group consists chiefly of cases where there is a failure either in part or in whole of that development which normally takes place at the time of puberty. This failure of development is usually classed as infantilism, hypoplasia, or infantile uterus where it involves the whole organ; but where the cervix is chiefly involved it has been customary to describe the resulting anteflexion as if it were a malposition, failing to recognize that it is in reality a condition intermediate between the infantile uterus, where cervix and body both remain underdeveloped, and the normal uterus where both have attained their full size and position. Before puberty the anterior vaginal wall is short and the small cervix points in the axis of the vagina; where development occurs only in the body of the uterus this short vaginal wall, with its underdeveloped cervix, persists, and there results the so-called anteflexion of the uterus or cervix. It is probable that the dysmenorrhoea and sterility which are almost certain to follow in extreme types of this condition are not so much the result of the mechanical flexion of the canal as of the failure to develop normal muscular and glandular tissues. There is, however, a mechanical effect from the poor drainage of secretions through the pinhole so characteristic of these cases. The method by which this may produce sterility has already been elaborated.

The last group is, like the second, made up of somewhat heterogeneous items, but which all have this in common,—that the ovaries are involved. As was explained under the "mechanism of sterility," the two common lesions of the ovary are the presence of numerous small retention cysts or the persistence of corpora lutea. There are a few cases of true cysts, but these are decidedly rare among the patients we are here considering. Taken together these lesions make up nearly 20% of all cases. Finally, we have included in this group a small number of cases showing still another type of ovary. This ovary is small and firm and on section contains more cicatricial tissue and less true ovarian tissue than normal. Such an ovary is occasionally due to lack of development, but more often represents early senile changes.

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*Amer. Gyn. Trans., 1921, Vol. xlvi, p. 243.

During the foregoing discussion an attempt has been made to reduce everything to its simplest terms. While such a procedure makes for ease in dealing with this subject, and helps to bring out general principles which apply throughout, there is always present the danger of overdoing it. No case is as simple as it might appear to be if placed under the simple classification shown in Table 3. In every case the secretions are of the greatest importance, and equally important is the normal functioning of the ovaries. Congestion or infection may have to be reckoned with.

In conclusion, let me reiterate the following points—in the first place, a given sterile mating may be either male or female in origin and the chances are about fifty per cent. either way. Second, where the case is one of female sterility the chances are about even that the cause will be pathological on the one hand, or developmental or functional on the other. About one-quarter of our cases had closed tubes, or some other inflammatory lesion. In one-quarter the cause of sterility was congestion from one source or another. Another quarter was essentially developmental and in the last quarter the salient feature was failure of ovulation. Finally, let me emphasize again that in dealing with sterility we are concerned primarily with disturbances in function and that mere treatment of pathologic lesions, however important that may be, will seldom by itself be successful in relieving the sterility.

DISCUSSION OF DR. MACOMBER'S PAPER.

Dr. Edward Reynolds, Boston: I think the method that Dr. Macomber has taken in classifying these cases is the only one that is available for clear presentation, but it is very important to emphasize what he said, and—which needs ever more emphasis—that in practice the cases do not classify so simply. It is the rarest thing in the world to see any case which belongs in only one of these classifications. There are almost always complexities and more than one condition present. It is also very important in every case to emphasize the degree of fertility on both sides, since slight degrees of fertility on one side, multiplied as they are by slight degrees on the other side, often amount to long continued, if not permanent, sterility without treatment, although this condition is very amenable to treatment. In general the main characteristic of sterility is the complexity of the subject and the fact that the balance which determines sterility is an extremely fine, delicate functional balance requiring much more careful analysis than the ordinary examinations which are given to the grosser lesions which determine health or disease.

A very important point is the mechanism of fertility or sterility, the disturbances of fertility to which Dr. Macomber calls attention. There are two characteristic and frequent errors which we see in many of the cases which are referred to us, most of which have been through the mill more or less already. First, we see many sterile women who have been operated on, or subjected to long treatment, for some anatomically gross lesion, such as one looks for in a gynecologist's office, but in which the treatment, operative or not, has been directed only to the evident lesion without investigating in what way that lesion has disturbed the mechanism of fertility and without treating the disturbances of fertility which are present; for that reason the sterility has not been relieved and the patient therefore turns up in our office. Many such women require a second operation for conditions which could perfectly well have been relieved during the course of the first if it had been preceded by an exact diagnosis. For instance, a woman goes to a first-rate man who is not interested in sterility. He finds a retroversion and says, "We will hang it up"—he does a first-class suspension operation and gets a first-rate and permanent anatomical result. He very likely relieves a backache, but he is not in the habit of investigating the minor alterations of secretions which kill the spermatozoa and which are usually dependent on bad cervical drainage, or of paying attention to the minor disturbances of the ovaries which result in an absence of successful ovulation, and does nothing about such conditions during his operation. His operation does not relieve the sterility. We find one or both of these conditions present and perhaps must repeat the operation in order to produce fertility. This is only one of many such conditions.

The second ordinary failure is in the case of a couple who have been told that they are perfectly well and that there is nothing the matter with them, but who have nevertheless continued sterile, when a disturbance in the mechanism of fertility is perfectly evident on full examination and is often promptly curable. In the long run one seldom gains credit by assuring a sterile couple that they are not sterile.

To use an illustration: there is not much sense in walking up to a wood lot and firing a rifle into it in the hope of getting a squirrel. You won't get the squirrel and you may do damage. If you want to make a success you must first see your squirrel and aim at him. As the result of long experience this seems to me the most essential thing to say in any discussion on sterility.

Dr. Macomber, (closing): Dr. Reynolds has not left very much more for me to say on the question of female sterility. I do want to emphasize, as he has also, that every case has a functional element even if there is gross pathology at the bottom of it. If you correct the pathology only, you don't necessarily get a successful result unless you see that the organs are functioning properly. The cervical secretion and the ovaries are the two important points on this question of functioning. You can get a very good idea of how the cervix is functioning by examining these patients after coitus and seeing what happens to the spermatozoa. The question of how the ovaries are functioning is more difficult to analyze. Ovulation and menstruation are not necessarily connected, although they often are. A certain hint of ovarian functioning can be obtained from menstrual history, and the examination of a patient under an anaesthetic will tell you whether there is an enlargement of either ovary; but when you come right down to it there is only one way of telling what is wrong with ovaries that are enlarged, and that is by looking at them. If you have an enlargement of the ovary with history of sterility, with everything else normal, you can by exclusion come down to the ovaries and recommend operation on those and then, at the actual time of operation, correct what is found.

That is the most unsatisfactory part of the examination for sterility, and often has to be left in doubt.

It is possible that the use of some of the glandular extracts may help out in the future, but so far it is only fair to say that the field is so uncertain and is so beset with various pitfalls that it is unwise to make any assumption in that regard.

Fracture of the Lower End of the Radius Associated with Fracture or Dislocation of the Lower End of the Ulna.

By John Homans, M.D., Boston,

and

Judson Arthur Smith, M.D.,

[From the Surgical Service of the Peter Bent Brigham Hospital, Boston.]

Read by Title.

The fracture or fracture complex to which we wish to call attention may be thought of as a fracture of both bones of the forearm at their lower ends from one to two inches above their articular surfaces. But since the difficulty in treatment is due to the behavior of the radius, and since much the same difficulty with the radial fracture may be encountered whether the ulna is completely broken, bent, suffers an epiphyseal separation or is dislocated at its lower end, it would seem more appropriate to describe the condition as one of radial fracture with a complicating injury to the ulna.

Six patients treated upon the surgical service of the Peter Bent Brigham Hospital form the basis of these notes. In age they range from seven to thirty-one, all but one being under seventeen. The injuries with one exception cannot be described other than as falls upon the hand, but the falls were usually of some violence. The youngest, and the only girl in the series, described a fall upon the flexed hand. One patient, the oldest, had been treated for four months before coming to the hospital, but the bones had not united solidly though fibrous union in poor position had occurred. Another had first suffered a greenstick fracture of both bones, but a second fall three weeks later had brought about a more complete fracture. Three attempts at reduction had failed before he entered the hospital. A third had been unsuccessfully reduced and had made no progress under a week of overhead traction upon the hand in bed. A fourth was subjected to traction in a similar way without effect. In a fifth, two attempts at reduction under gas were made before the patient was referred for operation. And only in one (complete fracture of both bones) was reposition without an open operation possible.

Case 1. J. C., No. 7585, male, age 31. Four months before admission he fell upon his right hand (manner of fall not described). The fracture was splinted by his physician for five weeks. At the end of four months there was fibrous union in poor position.

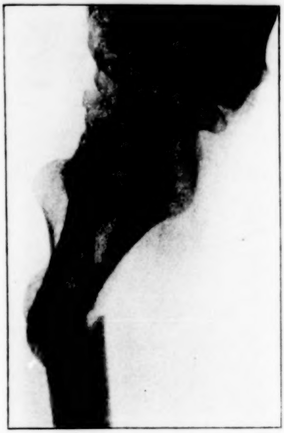

Fig. 1.—Case 1. Fracture of both bones. Note backward angulation of radius and backward dislocation of the lower end of ulna.

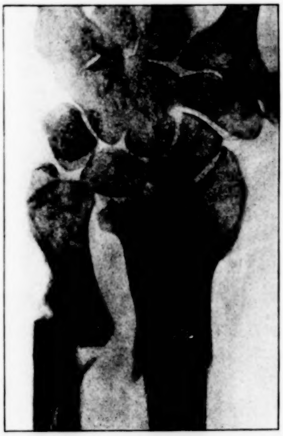

Fig. 2. Case 1. Anteroposterior view. Note the low level of the ulnar styloid as compared with the radius, indicating that interarticular fibrocartilage has been severed. Note also the presence of callus between the ulnar fragments and absence of callus about the radial fracture.

In Fig. 1, note especially the bending of the radius backward at the point of fracture and the posterior dislocation of the head of the ulna.

In Fig. 2, note the low level of the ulnar styloid as compared to the radial (indicating that the interarticular fibrocartilage and the other radio-ulnar attachments have been severed) and the drawing of the lower fragment of ulna toward the radius (pull of pronator quadratus). At operation, the ends of the fragments of both bones were refreshed, placed in apposition as well as possible and a plaster cast applied to hold them in the corrected position.

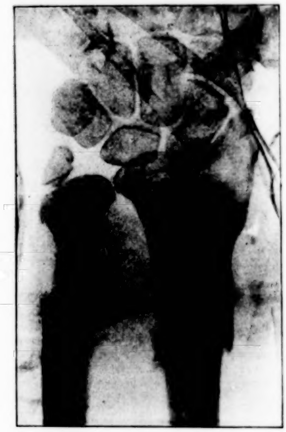

FIG. 3. Case 1. Postoperative. Anteroposterior view. Note that the articular surfaces of the radius and ulna are now in correct relation. The angulation of the lower ulnar fragments toward the radius has not, however, been corrected.

Fig. 3 represents the ensuing condition. In this plate, note the corrected relation of the radial and ulnar styloids and the failure to correct the outward pull on the lower ulnar fragment. A lateral plate taken at the same time shows that the posterior dislocation of the ulna has apparently been corrected.

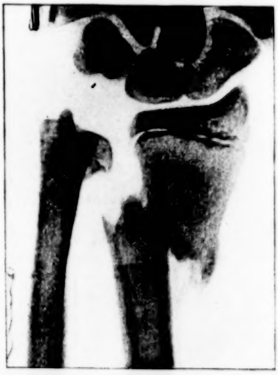

FIG. 4. Case 2. Anteroposterior view. Fracture of radius with separation of the ulnar epiphysis.

Subsequent to operation a recurrence of the radial deformity and of the ulnar dislocation took place. A plate taken six weeks after operative reduction when union was still fibrous resembles exactly Fig. 1. From this time until union became firm, elastic pressure was maintained to correct the angulation and a statement appears on the record three months later that the bones were in good alignment and solidly united. Since then the patient has not been seen, but relatives report that he is dissatisfied with the condition of his wrist.

This case illustrates the effect upon the radial fracture of both ulnar fracture and dislocation, as well as a tendency of the fractured radius to non-union.

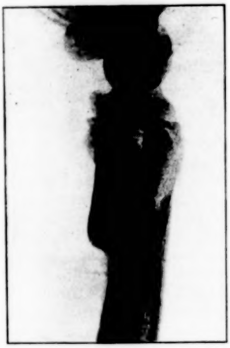

FIG. 5. Case 2. Lateral view. Note the anterior position of the lower radial fragments and the posterior dislocation of the ulnar shaft. The head of the ulna can be seen faintly through the lower radial fragment in its normal forward position.

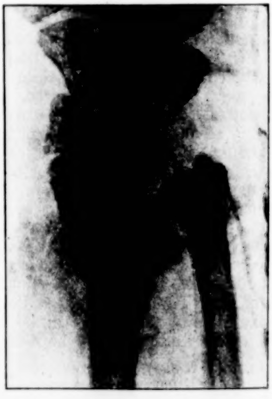

FIG. 6. Case 2. Postoperative. Note the replacement of the radial fragments. The position of the head of the ulna and of its shaft seems reasonably good.

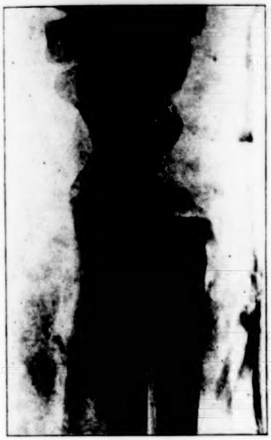

Fig. 7. Case 2. Lateral view. Note the backward displacement of the ulnar shaft. The displaced head lies considerably in front and can barely be seen through the lower radial fragments.

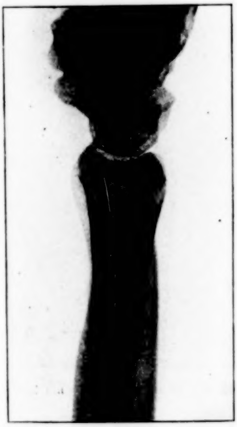

Fig. 8. Case 2. End-result. Dislocation of the ulnar shaft has been corrected, the shaft and head are in normal relation, and the radius has healed in good alignment.

Case 2. D. H., No. 10021, male, age 16. Five weeks before admission he fell upon his left hand (manner of fall not described) sustaining what was at first thought to be and was treated as a Colles' fracture. Three weeks later he fell again, causing a re-fracture. Several attempts at reduction under an anesthetic then failed.

Fig. 4 illustrates the condition at this time. Note the over-riding of the radial fragments. The upper fragment is drawn toward the ulna. A separation of the ulnar epiphysis without an actual fracture of the shaft has taken place.

In Fig. 5, the lower radial fragment, contrary to the position of deformity in a Colles' fracture, is anterior. The ulna shaft is dislocated backward and is separated from the epiphysis, which can faintly be seen well in front.

At operation, the ends of the radial fragments were refreshed and so beveled that they locked together. In putting on the plaster cast the ulna could not be returned to its normal position and remained posterior.

Fig. 6 shows the operative correction of the radial deformity. In this anteroposterior view the ulnar epiphysis seems in fair relation to its shaft.

In Fig. 7, the posterior dislocation of the ulna is shown uncorrected. The epiphysis is, moreover, far in front.

The result, as shown in Fig. 8, two and a half years later, is functionally perfect. The ulna feels short and unusually movable. Inversion of the hand is very slightly increased, making up for an equal diminution in eversion.

This case illustrates the effect upon the radial fracture of separation of the ulnar epiphysis.

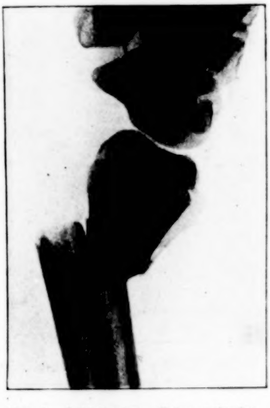

Fig. 9. Case 3. Lateral view. Before reduction. The direction of the deformity corresponds to that of Colles' fracture. The lower fragments of both ulna and radius are in natural relation to each other.

Case 3. A. M., No. 14903, male, age 14. He fell upon his left hand (manner of fall not stated).

Fig. 9 shows the fracture before reduction.

Fig. 10 shows the result of reduction. Note that the ulnar fragments are apparently replaced in perfect alignment, but that the fragments of the radius, though hardly over-lapping, are not in apposition.

Fig. 11, taken the same day as Fig. 10, shows that both bones are in anteroposterior alignment and that the lower fragment of the ulna is in normal relation to the radius. A week of traction by suspension in bed failed to improve the position of the fragments. At operation the

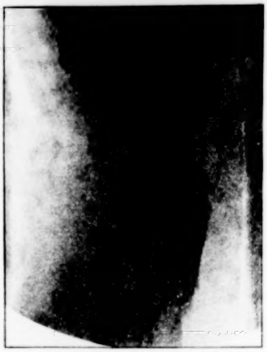

FIG. 10. Case 3. Lateral view. After preliminary reduction. The ulnar fragments are in good alignment and the radial fragments are not.

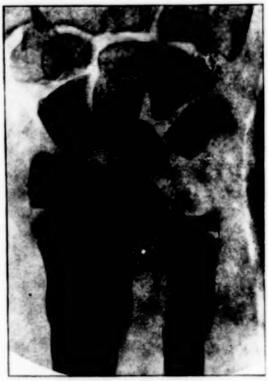

FIG. 11. Case 3. After preliminary reduction. Anteroposterior view. Taken same date as Fig. 10.

radial fragments were placed in apposition. Fig. 12 shows the condition after operative reduction. Healing was prompt and the result, as shown in Fig. 13, was anatomically and functionally perfect.

In contrast to the two previous cases, this one shows that the deformity of the radius does not tend to recur after reduction when the lower ulnar fragment is in normal relation to the radius (triangular ligament intact. No ulnar dislocation.).

CASE 4. H. J. DeS., No. 13352, male, age 12. The patient fell from a moving automobile (manner of injury to arm unknown), injuring the left arm.

An attempt at reduction under gas and ten days of strong suspension traction in bed failed to improve the relation of the fragments.

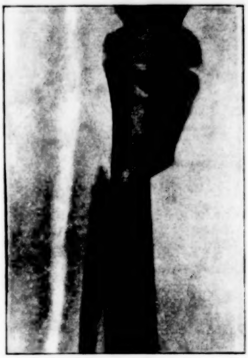

FIG. 12. Case 3. Lateral view, postoperative. Note the corrected position of the radial fragments.

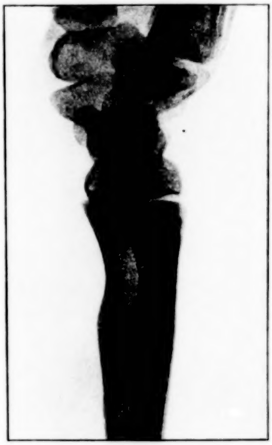

FIG. 13. Case 3. End-result. The bones have healed without deformity.

Fig. 14 shows the fracture before operation in lateral view. The lower fragments of both radius and ulna are anterior. There is considerable over-riding. Note that there *appears* to be no evidence of dislocation of the lower end of the ulna.

Fig. 15 confirms the findings of Fig. 14, but shows in addition that a chip has been detached from the articular surface of the radius.

At operation the radial fragments were replaced, but no attempt was made to bring the fragments of the ulna into perfect apposition. The arm and hand were placed in a plaster cast.

Fig. 16, lateral view, shows the operative correction of the radial deformity. The ulnar fragments appear barely in contact.

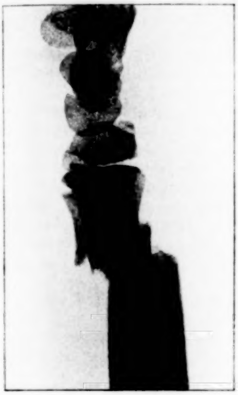

Fig. 14. Case 4. Lateral view. Before operation, but after prolonged traction. Note that the fracture shows the reverse of the Colles' deformity.

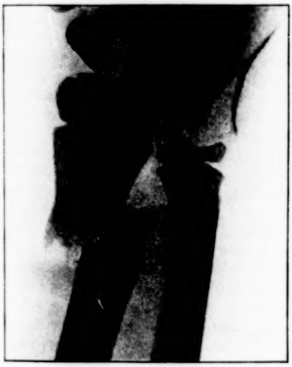

Fig. 15. Case 4. Anteroposterior view. To compare with Fig. 14.

Fig. 17 gives the clew to the real difficulty in this case which had not before been apparent. The lower articular surface of the ulna is not in normal relation to that of the radius but is much higher, showing that there is in fact a dislocation of the lower end of the ulna. The effects of this dislocation, doubtless a result of rupture of the interarticular fibrocartilage, subsequently appear.

Fig. 18, a plate taken over a month later, shows that bending of the radius at the point of fracture has recurred and now the *backward dislocation of the lower end of the ulna is apparent.*

The bones finally united after correction of the deformity and a year and a half later the result, as shown in Fig. 19, apparently is perfect.

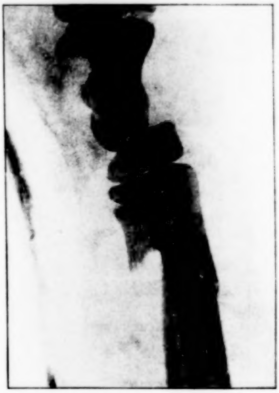

Fig. 16. Case 4. Postoperative. Radial fragments have been placed in position. The displacement of the ulnar fragments is uncorrected.

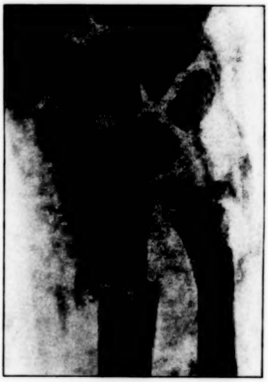

Fig. 17. Case 4. Anteroposterior view. Taken same date as Fig. 16. Note the much higher level of the lower end of the ulna as compared with the radius, showing that the heads of the two bones are not in their normal relation.

This case illustrates not only delayed union of the radius, but, what is more important, the tendency of the radius to bend when the lower attachment of the ulna is insecure. The condition is similar to that shown in Cases 1 and 2 and should be contrasted with Case 3. For though Case 3 suffered a fracture apparently similar to Case 4, there was no dislocation of the ulna from the radius in the former and no tendency of the radius to bend after reduction. The two following cases further illustrate this point.

Case 5. D. H., No. 8804, female, age 7. The patient fell upon the flexed left hand. Reduction of the fractured radius could not be effected under an anesthetic.

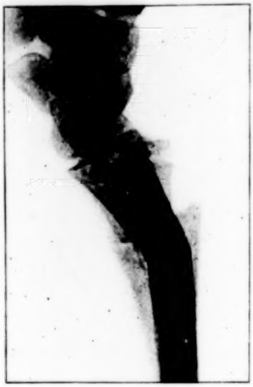

FIG. 18. Case 4. Lateral view one month later. Union of the ulna has occurred, but there is posterior displacement of the head. The backward deformity of the radius has recurred.

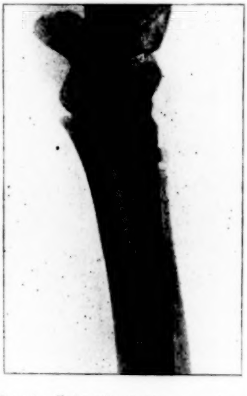

FIG. 19. Case 4. End-result, showing correction of the deformity as a result of treatment.

After the first attempt at reduction the position of the radial fragments was found to be poor. There was no over-riding, but the upper fragment remained anterior to the lower and the two were barely in contact. There was a subperiosteal fracture of the ulna without deformity. Open operation was required to restore the alignment of the radius.

The late result, three years later, is equally perfect in every way and again emphasizes the fact that there is no tendency to recurrence of the radial deformity when the lower end of the ulna is secure.

CASE 6. P. F., No. 8821, male, age 12. The patient fell from a trapeze upon the right arm and hand, but the exact manner of injury to the arm is not known.

The fracture was reduced at once under gas—the only instance in this series in which this was accomplished.

Subsequent radiograms showed that the radial fragments were in good approximation and alignment. The ulnar fragments were barely, but probably definitely in contact.

The bones healed without delay and without any tendency to angulation, giving a perfect late result. It seems probable that here the fractured ends actually locked in contact and promptly united.

Examination of standard works on fractures fails to show that this injury has been given particular attention. Stimson states that in fracture of the radius, "at or below the middle of the bone the tendency of the biceps is to draw the lower end of the upper fragment forward and inward and that of the pronator quadratus and supinator longus is to draw the upper end of the lower fragment toward the ulna. . . . *Over-riding has been observed only when dislocation of the lower end of the ulna was associated with the fracture.*" He speaks of the use of prolonged traction to replace the radial fragments when the lower end of the ulna is dislocated, but says nothing of the tendency to displacement or angulation once the fracture is immobilized by splints or plaster.

Cotton alludes to greenstick fracture of both bones slightly higher than the Colles' line. He considers that it is a definite type in small children. It may look like a Colles' fracture, though the ulna head is not altered in relation to the styloid process of the radius. He advises against ever completely breaking such a greenstick fracture on account of the difficulty in treating the loose fracture of both bones.

There is some question whether the fracture described in these notes can be considered an entity. Its exact manner of production is not known, though several of the falls have been of considerable violence. The radius is so broken as to be left with the lower fragment anterior in nearly all cases. Therefore the mechanism must usually differ from that of the Colles'. The deformity is a little higher but many often appear much like that of the reversed Colles' (Smith's).

The initial difficulty in reduction is undoubtedly due to several factors. First, the loosening of the radio-ulnar articulation destroys the fulcrum upon which forced inversion of the hand pries loose and draws down the lower radial fragment. Second, even when this articulation is intact, the lower fragment offers a much longer arm for leverage than is the case in a Colles' fragment. Third, the pull of the pronator quadratus, which draws together the lower two inches of the radius and ulna, offers a most effective resistance against any such leverage as can be made. And finally, straight traction which might be expected to effect reduction can be applied only to the hand and not directly to the lower fragment of the radius.

It is also conceivable that interposed muscle (pronator quadratus or supinator longus) prevents reduction, but this has never been demonstrated in the operations of this series.

The ultimate and postoperative difficulty in holding the fractured radius is undoubtedly due to the instability of the lower fragment of the ulna: not the fracture of the ulna at the level of the break in the radius, but the tearing off of the ulna from the radius at the articular surface—a rupture, in fact, of the strong interarticular fibrocartilage, the chief ligament uniting these bones. For a consideration of the six fractures here recorded shows clearly that though open operation is nearly always necessary to replace the radial fragments, *it is only in instances where the lower attachment of the ulna and radius is severed that secondary displacement and deformity occur.*

We may summarize our conclusions upon the nature and treatment of this fracture under the following heads:

1. The mechanism by which fracture is produced cannot be accurately described, but is in general a fall upon the hand; possibly a blow upon the wrist.
2. It occurs in young people.
3. The radius is fractured one to two inches above the articular surface. The ulna may be broken at the same level, but whether or not it is broken, the lower end of the ulna may be dislocated (backward).
4. The reduction of the radial fragments is made difficult by any one of a number of factors, but is almost impossible by bloodless methods when the lower end of the ulna is dislocated.
5. Open operative reduction is indicated after failure of one attempt at closed reduction.
6. After reduction, the loss of the splinting effect of the ulna due to dislocation of its lower end causes the radius to angulate even in well applied restraint.
7. After reduction, if the radio-ulnar articulation is intact, there is little or no tendency to deformity, even though the ulna is fractured on a level with the radius.
8. Open operative reduction is simple, and no suturing, wiring or plating is necessary, but the position must in all cases be most carefully watched and maintained.
9. There is a tendency to delayed union of the radius.

THE HERITAGE AND THE RECKONING OF THE SURGEON.

By Michael F. Fallon, M.D., Worcester, Mass.

The consideration of the heritage of the surgeon could, perhaps, be held nowhere more appropriately than in this historic city of Boston, for the medical profession here has always championed the highest medical standards, and has achieved the highest professional attainments.

The names of many of the physicians and surgeons of this city are writ large in the history of medicine and surgery. Even in my day were such men as Reginald Fitz, whose research work gave to us among other things the right knowlledge of appendicitis and pancreatitis; John Collins Warren, who added lustre to the fame of illustrious ancestors; David Cheever, unsurpassed as surgeon, writer, and teacher; Henry P. Bowditch, said to be, in his day, the leader of American physiologists; Thomas Dwight, renowned as an anatomist; Maurice Richardson, as lovable as he was brilliant; the fearless John Homans, the skillful Porter; the genial Fred Shattuck, whose correct diagnosis never failed to elicit the wonder and admiration of his fond students. When to these illustrious names are added those of Oliver Wendell Holmes, the Jacksons, and Bigelow—we, in this neighborhood, may well regard with pride the noble heritage that has been given to us; and then, too, to Boston is due the crowning achievement and the epoch-making discovery—the giving of ether anaesthesia, the priceless gift to suffering humanity through the instrumentality of William T. G. Morton and John Collins Warren, the elder.

The study of the lives of these men shows us that their purpose was not to get all they could out of life for themselves, but to try to make the lives of others happier.

In comparison with present-day surgery, both in the principles and in the practice of surgery, the surgery of former times was extremely limited. Sir Astley Cooper said, "While it is the province of the physician to attend to internal diseases, it is the duty of the surgeon to attend to those that are external,'"[1]

Practical surgery, even up to the last quarter of the nineteenth century, was mostly given to the relief of fractures, amputations, stones in the bladder, strangulated hernias and some imperative affections, mostly external.

Hence, it is not surprising that, in former days, even the most renowned surgeons had but few operations to their credit. For example, in the "Life of John Collins Warren, M.D.," at the end of volume two is appended a list of the larger surgical operations performed by him between the years of 1821 and 1851. These were performed mostly in the Massachusetts General Hospital. There were, in all, two hundred forty-three of what he calls, "the larger surgical operations" during these years, and these included amputations, bone-operations, external tumors, lithotomies and a few hernias.[2]

Dr. Samuel D. Gross, as late as 1864, only three years previous to Lister's famous announcement on antisepsis, in his book on surgery disposes of diseases of the gall-bladder in less than two pages. He does not even mention gall-stones as a disease.

Although their operations were few, we can imagine with what consternation the surgeon in former days anticipated an operation.

Dr. Gross said, "It has been asserted by an eminent authority, Professor Simpson, that a patient who is about to undergo a severe operation incurs as much danger as a soldier engaged in the most fierce and bloody battle. This is a strong declaration, but I believe it to be fully borne out by facts; nevertheless, it must be received with some degree of allowance."[3]

As evidence of the dangers a patient faced in an operation, consider a series of herniotomies recorded by Dr. Gross![3] In all, there were six hundred twenty-two cases of herniotomy operated.

Of these, there were three hundred twenty-six recoveries and two hundred ninety-six deaths, and the principal causes of death after herniotomy were shock, hemorrhage, peritonitis, erysipelas and pyemia.

Pathetic was the remark of Dr. Gross, even as late as 1864, when he says, "During an epidemic of erysipelas in Kentucky in 1845, 1846 and 1847, the slightest abrasion of the skin, the leach bite and the application of the blister were often followed by an obstinate, and sometimes even a fatal attack of the disease, and the consequence was that I was compelled, for many months, to decline the use of the knife nearly altogether."[3] We can readily see why surgery was not popular in those days.

Dr. John Morgan, founder of the medical department of the University of Pennsylvania, after a long time spent in study abroad, wrote from London to Dr. Cullen in 1764, "I am now preparing for America to see whether, after fourteen years of devotion to medicine, I can get my living without turning apothecary, or practitioner of surgery."[4]

A professor of surgery might teach the principles of surgery, but he would not demean himself to operate.

The famous Von Haller (1708–1777), a professor of surgery, never performed an operation, and "Billroth commenting on this arrangement says that Albrecht Von Haller, in Berne, should, for many years, have lectured on surgery without ever having touched a single human creature with the knife, is for us in these days, hard to comprehend."[4]

Even John Hunter's brother William tried to dissuade him from becoming a surgeon.

And yet, without the indefatigable labors of such men as John Hunter and Samuel D. Gross and John Collins Warren surgery could not have reached the high plane of the present day.

The results of the labors of John Hunter, for example, in clinical research, in physiological and pathological experiments, form no small part of the foundation of present-day surgery. Step by step, even from very ancient times, improvements leading to discoveries have marked the progress of surgery.

The ligature was known even to Celsus, but it could not be properly applied until the discovery of the circulation of the blood by Harvey, and in the development of the ligature, we owe much to an American—Phillip Syng Physick, since it was he who first advised the use of animal ligature in tying arteries, and he made these ligatures from fine strands of buck-skin.[5]

Perhaps no factor responsible for the success of modern surgery was so spontaneous in its origin, and so quickly adopted, as was that of the anaesthetic ether.

Sir James Paget thus sums up the claims of the various applicants for the discovery of ether. "While Long waited and Wells turned back, and Jackson was thinking, and those to whom they had talked were neither acting nor thinking, Morton, the practical man, went to work and worked resolutely. He gave ether successfully in severe surgical operations; he loudly proclaimed his deeds, and he compelled mankind to hear him."[5]

The three things more than others that have made modern surgery possible are control of hemorrhage, of pain and of infection; and, for the knowledge of infection, that is the cause of most diseases, we are indebted to Pasteur, "the most perfect man who has ever entered the kingdom of science." . . . "Before him, Egyptian darkness; with his advent a light that brightens more and more as the years give us ever fuller knowledge." . . . "To no one man has it ever been given to accomplish work of such great importance for the well-being of humanity."[6]

Pasteur's investigations, begun with the fermentation of beer and wines, culminated in the discovery that each infectious disease is produced by development within the organism of a special microbe. Pasteur gave to us, for the first time in the history of the world, the knowledge of infection, and from this discovery more than from anything else, modern surgery has arisen.

At the time of Pasteur's announcement of his discovery of the causes of infection, Lister, who was in Glasgow, recognized the importance of the innovation that was to transform surgery.

It is difficult to realize that the humane Lister met with opposition for years in his attempt to introduce the principles of Pasteur into surgery, but, finally, the simple and sane measures of surgical cleanliness obtained, and in the decennium between 1880 and 1890, operations were done that were never before attempted. Above all, a worthy champion of the principles of Pasteur was found in Billroth, the master among master surgeons, and surgery received an impetus from Billroth in the last quarter of the nineteenth century that it had never known before. Pain, hemorrhage and infection were now under control by the surgeon, and Billroth, by his experiments upon animals, and his pathological and surgical research labors upon the human being, extended the field of surgery. Among his many notable achievements, he did the first successful resection of the stomach, and he established many innovations in gastro-intestinal surgery that could never previously have been attempted.

What a debt we owe to the generations of unselfish men who labored often in spite of the greatest difficulties, and whose labors have finally culminated in the wonderful status of present-day surgery! And how these men did labor! No man ever worked harder than John Hunter (1728-1793). He arose about four o'clock in the morning and seldom went to bed before midnight. “Come early to me, tomorrow morning, young gentleman,” he said to a medical student who had been introduced to him, “and I will put you in the way of things. Come early in the morning as soon as four if you can.” The young man came at four o'clock in the morning and found Hunter dissecting a beetle.[7]

John Hunter's income in his last years amounted to over six thousand pounds annually—a large sum in those days, and yet he died a poor man. He turned his income back into professional activities. We, today, have profited immeasureably from the results of his tireless industry.

An indefatigable worker, also, was John Collins Warren (1778-1856), the elder. He was never robust, yet he was a tireless worker. He was an early riser, and frequently labored with his books, and with his writing, until two in the morning after a hard day's labor.

And Billroth (1829-1894) worked continually for months at a time from sixteen to eighteen hours a day.

Pasteur's favorite phrase was, “Let us work!” And in a letter to a member of his family he said, “When one is accustomed to work, it is impossible to do without it. Besides, everything in this world depends on that. Armed with science one can rise above all one's fellows.”[8]

What should be the reckoning of the surgeon in return for the noble heritage given him through the unselfish labors of his predecessors? In the first place, he should develop to the upmost in his preparation and in his practice the old Hippocratic standards of learning, of integrity, of humanity, and of probity.

How may he best accomplish this in his preparation for surgery? Dr. John B. Roberts, in his Presidential Address at the meeting of the American Surgical Association, June 14, 1921, answered this question admirably, and he said, in part:

“A conviction has been brought to me, by these studies, that a maximum of success up to the limit of an individual's native capacity may be best obtained by certain educational equipments acquired prior to the entrance into the undergraduate medical school and after release from the now usual hospital internship.

A real surgeon should have knowledge of logic, psychology, ethics and, at least, a familiarity with the fundamental processes of rather advanced mathematics and of chemistry and physics. Otherwise, how can he be expected to accurately use his reason to understand and interpret the mysteries of biochemistry, physiology and the physical processes of life?

Similarly, he needs, particularly in a surgical career, a working knowledge of general mechanics, and should have some training of his hands and fingers by which his cerebral centres will be stimulated to specific reactions.

In addition to an acquaintance with Latin, he should know some Greek. Those tongues lie at the basis of medical nomenclature.”[9]

Is such a preparation for the study of surgery superfluous? Let Dr. Samuel D. Gross who has been called the Father of American Surgery, answer from his own experience. When he (Dr. Gross) had studied medicine for a while, he said:

“I, at length, gave up in despair. I found that my Latin was inadequate, and that I could not understand the technicalities of medicine without some knowledge of Greek. *This was the turning point in my life.* I had made a great discovery—the knowledge of my ignorance, and with it came a solemn determination to remedy it.” He consulted his preceptor, Dr. Swift, who told him “to get an education first, and then study medicine.”[10]

John Hunter refused to get an education first, but he regretted it in after life, and the absence of an education is evidenced in his writings by errors of style and literary composition which greatly disfigure and obscure his writings.

The preferment which may come to a surgeon in uniting education with his professional studies may be seen in a consideration of some of the most prominent surgeon-generals of the Revolutionary War, Drs. Shippen, Rush, Jones, McKnight, Cutter, Morgan had both academic and medical degrees. Dr. Burnett had only an academic degree, and Dr. Turner, one of the best of them all, had neither.[11]

The acknowledged dean of American educators in this country, Dr. William Welch, said, “There is a very unsatisfactory demand for collegiate training in this country. It is unfortunate that such a situation should exist.” And again, he says, “Right practice requires abundant knowledge, nowhere more so than in medical practice, and the all-sufficient justification of the position held by the various sciences in the preliminary and the professional education of the physician is that they furnish knowledge and discipline of mind needed in the preparation for his future work. The social position of the medical man and his influence in the community depend, to a considerable extent, upon his preliminary education and general culture.

For this reason, as well as for his intellectual pleasure in his profession, and as a sound foundation for his future studies, a student should enter the medical school with a liberal education which should include training in the sciences fundamental to medicine."[12]

And Dr. Osler, who had unusual experience in the training of medical students, said, "No one can have watched the successive groups of young men pass through the special schools without profoundly regretting the hap-hazard, fragmentary character of their preliminary education."[13]

Already the influence of such men as Drs. Welch and Osler, on proper preliminary training, appears in the requirements for the Class A medical schools for, since 1918, such medical schools require that two preliminary years of college work be taken in approved colleges of arts and sciences, thus recognizing that the cultural atmosphere in such colleges is preferable to a strictly premedical scientific course.

The premedical course, in addition to the humanities and appropriate sciences, should also include a training in right ethics.

The value of proper ethical conduct to a physician is well summed up in an opinion of Chief Justice Rugg of the Supreme Court of Massachusetts, in the recent case of a physician found guilty of gross misconduct by the Board of Registration in Medicine:

"Soundness of moral fibre to insure the proper use of medical learning is as essential to the public health as medical learning itself. Mere intellectual power and scientific achievement, without uprightness of character, may be more harmful than ignorance."[14]

Fortunately, for the future of medicine and surgery, the study of the humanities is coming into its own in the preliminary curriculum. If the study of the humanities were neglected, we perhaps would look in vain in the future for such doctors as Oliver Wendell Holmes, William H. Welch and Osler.

Will the combined cultural and scientific preparation unduly prolong the time of entrance into professional life The average age of graduates from Class A medical schools in this country is now twenty-seven years. Any further lengthening of the medical curriculum may present a serious sociological problem, and more especially in retarding the marriage age; and, again, in dulling the initiative by a late entrance into professional life. Some years ago, I heard Dr. Osler discuss this problem, and his proposed solution then is the present-day solution. We cannot shorten the premedical or medical course, but we could endeavor to shorten and change the course in the lower grade schools.

Dr. Osler said, "It does seem too bad that we cannot have a student in his eighteenth year sufficiently grounded in the humanities and in the sciences preliminary to medicine; but this is a problem upon which a Milton or a Locke could discuss with profit."[15]

It is wholly practical for a boy to begin his study of the classics and foreign languages, together with pre-scientific studies, at the age of ten, and if the parents were to direct the early education of their son, it would be possible for a young man to have a proper preliminary cultural and scientific training, and also, his medical training, and graduate from medical college at the age of twenty-four.

I lay stress upon what I believe to be the proper basic preparation of a surgeon since, in so doing, I believe that in no other way can a surgeon better fulfill his duty to his patient and to his profession.

Another duty of the surgeon in upholding his heritage and to advance the interests of his profession is to unite with other surgeons to protect the sacred trust vested in him.

Sir Harold Styles said, "It may safely be asserted that, in no walk of life, in no other profession, is the life of a subject so much at the mercy of his fellow-man as when he places himself in the hands of a surgeon. It is right and proper, therefore, that the profession should see to it that such a sacred trust should be placed in the hands of men who have shown that they are morally as well as intellectually and technically capable of fulfilling the trust."[16]

The control of hemorrhage, and of pain and knowledge of the source of infection have given to some who may not be surgeons a facility in operating that, at times, may lead to disastrous results; hence, surgeons should endeavor to authoritatively limit operative surgery to those who have had adequate training.

The discoveries that have made modern surgery possible, and especially the knowledge of infection, have also given us vast problems for solution, and many scientific possibilities. Pasteur once said, "In the field of observation, chance only favors the mind which is prepared." And in trying to solve these problems let us study the ways of Pasteur—his humility of mind, his concentration, his diligence, and let us not be self-satisfied with our labors as was Baron Boyer, who, over one hundred years ago, declared that "surgery had then reached almost, if not actually, the highest degree of perfection of which it was capable."

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DISCUSSION OF DR. FALLON'S PAPER.

Dr. W. P. Bowers, Clinton: The paper which has been presented is a most difficult one to discuss because it is so complete that it leaves room only to suggest some ways by which the practice of surgery may be carried on to meet the standards already established.

The first question involved is how to select and prepare students for surgery. Medicine as you know has been for a long time a free-for-all race. There have been comparatively few hurdles or obstacles erected to prevent anybody from practising medicine. The attempt which has been made by the State to regulate medicine is only of comparatively recent years, and only went a little way. We have with us this morning the last surviving member of the group of men who tried to get the State to establish certain standards regulating the practice of medicine, and it seems eminently proper that I should refer to the gentleman on my right here (Dr. Gay) who was a pioneer in that movement designed to protect the people from the incompetent and improper practice of medicine.

Now surgery has accomplished so much that the problem today is to develop men who are able to carry on that which has already been accomplished in the way of study and practice. And how shall we do that? You say, of course, first, it is the problem of the medical school, and so it is; but are the medical schools carrying out the possibilities of the education and development of the surgeon? Wouldn't it be logical to demand that the medical schools should first study the capacity of every aspirant for surgical recognition, to determine first whether a given person has those qualifications, mental and physical, which would warrant his taking up the study of surgery? You know in the war it was the custom to examine people for definite types of service. An aviator, for example, had to go through some thrilling tests before he could be given the right to exercise that particular function, and if he failed to meet these tests he was denied the privilege. It seems equally logical to say to a young man wishing to be a surgeon that he has not the educational qualifications, and hence must be denied the privilege of practising surgery if the facts warrant this decision.

It seems to me to be first the function of the medical school to decide, and after deciding then comes the question of training. Throughout the country there is today a very serious question as to the character and quality of the interne year. Of course every surgeon from now on must be a man who has had the privilege and experience of an internship, and the question is being discussed very seriously whether the original preparation of every practitioner should not be through a rotating internship, and later those who wish to develop the specialties should take a supplementary interne service which shall fit them particularly for the specialty which they have elected to follow.

That influence and power and function of medical schools can only be exercised, however, up to a certain degree, because beyond that you must have a certain power given to the State through its representatives to select the men who shall practise the higher departments of medicine as demonstrated in surgery and other specialties. There must come a time when this simple examination, which can be made only sufficiently severe to be called fair, shall be regarded only as a preliminary examination with a further examination for the right to practise specialties. Not only the medical schools, but the State itself must determine some further qualifications than are now required of those practising medicine in its higher branches. There are certain types of practice which do require prolonged study and extensive experience and training under those who are qualified to give that advanced teaching.

These problems, it seems to me, are the problems which face the surgeons today. The progress which has been made has placed surgery on a high plane, and that must be maintained through men who are better educated than the average practitioner.

Dr. John T. Bottomley, Boston: It is refreshing, perhaps I had better say it is refreshingly surprising, to find on the program of a surgical section-meeting such a title as the paper of Dr. Fallon bears. Surely it is stimulating to listen to the reading of that paper by the man who had the wit to offer it for the education and delectation of the section-members. When I was invited to take part in the discussion, I confess that I accepted with considerable hesitation; for, to tell the truth, it is not an easy matter to make comment on such a paper, nor is it a simple thing to know just what line to follow. However, as I mulled over the ideas set forth in the reader's abstract, several thoughts came to my mind.

First of all, there is most certainly a need for such papers, at least occasionally, to rouse in us the realization that we surgeons have a heritage, that it is one in which we may take a just pride and that it contains in itself much which should comfort and stimulate us in our day's task. A just appreciation of the natural moral law holds us responsible for the use we make of what we possess in the way of either body or mind, in the realm of the physical or in that of the spiritual (I use the word in its broad sense). So in a way we are bound to hold up before the mirror of our minds, for our own contemplation and emulation, the heroic figures and deeds of those pioneers in our profession who yesterday cut the paths and blazed the way that we might the more easily follow the road today. So, too, the reckoning of the surgeon really embraces his heritage. To us has been handed the torch; it is for us to hold it aloft, to brighten its flame, to broaden the light it sheds.

And then the reckoning of the surgeon! The General Secretary of the Y. M. C. A. of Chicago, with whom I have had many pleasant hours, once told me that, in talking to young men on the problems of life and work, he often expanded his theme from these three headings: (1) define your possibilities, (2) defend your possibilities, (3) develop your possibilities. His outline may well be applied to us and to our work. We should define clearly the field of surgery in which we conclude we are best fitted to labor; we should prepare ourselves adequately for work in that field; we should let nothing of lesser importance entice us away from our endeavors and we should develop our powers to the utmost limit permitted by the conditions under which we carry on. Time, thought, effort and tenacity are all required to get even a good start on the road.

May I, in closing, express a thought on what I conceive to be our duty in the matter of safeguarding the practice of surgery.

First, we must sharpen the professional conscience. We must be honest to ourselves and to the public. We must not attempt the things we are not fitted to do. We must not fail to prepare ourselves thoroughly before we begin to do. We must not cease in our efforts to uncover our weak spots and then to strengthen them by travel, by observation, by study and by work. The acquisition of a medical degree means the beginning and not the end of toil.

Second, once we have trained ourselves by the wear of our hands and the sweat of our brows for the chosen work, it is but mere justice that we should protect ourselves and our work against the inroads of those with inadequate training and just as inadequate consciences. In protecting ourselves we are only protecting the public who are entrusted to the care of the profession at large. The best of us at times fall into error and make mistakes; the worst of us come close to committing crimes.

I am satisfied that no organization alone, no appeal to the higher things of life, no court can better to a satisfactory degree the conditions that we all know exist today. We must educate the lay public

to demand that he who pretends to do surgery must be fitted to do surgery, and that he must be certified by and bear the approving mark of some organization of his peers rightfully constituted to so certify and so approve. I believe that this information must be got to the public through the usual channels by which information reaches the public—through the platform and through the press. The founding of the American College of Surgeons, no matter how dark you may personally regard the cloud under which it was born, no matter how deep the distrust you may personally feel for its master-men, methods and machinery, no matter how faulty you may think are some of its judgments, marks a long step in the right direction. The men who conceived and launched it were at least men of vision who did, while we dreamed. Not in this generation will its greatest good be had, but in the next and succeeding generations, when we and its founders alike shall have passed on. It is the only general certifying authority that exists for us, and I regard education of the public on that point as one of its great functions. I believe we should support it for the sake of distant generations. It should play a great part in the future reckoning of the surgeon.

THE TREATMENT OF TONSILS BY RADIATIONS FROM RADIUM SALTS INSTEAD OF OPERATION.

BY FRANCIS H. WILLIAMS, M.D., BOSTON.

THIS paper is a report of progress. The subject is of importance not only to a large number of patients, to the surgeon and the laryngologist, but also to the general practitioner, who is the first to see many of the patients, 500,000 more or less,[*] who are operated upon each year in this country for the removal of the tonsils.

The basis of this use of radium is the fact that lymphoid tissue, of which the tonsils and adenoids are largely composed, is especially susceptible to its radiations, and further, that the diseased tissue in the tonsil is less resistant to them than the normal. Radium should not be depended upon to get rid of fibrous tissue or pus. The presence of pharyngitis or laryngitis, so far as I have seen, does not contraindicate the employment of radium.

In carrying out this treatment it seemed to me desirable to use the radiations of radium rather than the emanations, as the radiations are uniform in output and thus permit of accurate dosage in a simple and convenient manner.

The method is based upon measurements of the radiations, made with a fluorometer, to determine the proportion of these:

First, that would reach the tonsils through different thicknesses of aluminum;

Second, that escape through the back of the container, and would reach other parts of the throat than the tonsils;

Third, that are absorbed by different thicknesses of tonsillar tissue;

Fourth, that are absorbed by the tonsillar tissue and the ramus of the jaw-bone.

These measurements showed that of the total amount of the radiations going in any other direction than the tonsil, the proportion escaping from the container used was only about 4 per cent., an amount that may be disregarded; and that of the total amount of the radiations issuing from the front of the container with a filter of aluminum 0.29 mm. thick, the proportion absorbed by 13 mm. of tonsillar tissue was a little less than 90 per cent., and that absorbed by this tissue and the ramus of the jaw was more than 90 per cent. The results of the other measurements need not be considered in detail here.

Naturally, the first thought of many practitioners would be that it is a serious matter to put radium into the throat, and to do this without carefully limiting the radiations would justify the apprehensions that were generously expressed to me by some of my colleagues when I first began to use radium for the treatment of tonsils, but these measurements show that the risk of injury to any part of the throat is negligible, if proper precautions are taken, and they have so guided my clinical use of radium that no harmful results have been noted. Among remedies of great power, I do not recall any in the use of which the action is exerted so completely where it is needed, and, at the same time, to so slight a degree where it is not desired, as is the case with radium by the method here described.

Let us now consider the clinical side. Of a group of 101 patients, the youngest was 5, the eldest 60 years of age, and in their treatment I have been guided by about twenty years' experience in the use of radium. The radium was usually applied in a silver container, about 6 mm. thick and about 16 mm. in diameter (a gold one, made for me since this was, is thinner), that has an aluminum cover 0.29 mm. thick, which acts as a filter. The container is conveniently attached to a light steel rod, that has a handle on the other end, and is covered with a new rubber cot every time it is used. Various other metal filters can be placed over the front of the container to absorb certain of the radiations. The treatments, with 50 mg. of pure radium bromide (26 mg. of radium element), were of about 20, 15, or 10 minutes' duration for each tonsil, according to the filter used, which was of aluminum 0.87, 0.58, or 0.29 mm. thick, respectively. I say "about" advisedly, because the length of treatment depends upon the patient's condition, the size and character of the tonsil, and what one has in mind to accomplish. In some patients there was reason for exceeding these doses; three among them had a moderate reaction for two or three days, but this was not enough to interfere with their usual diet or occupation. Good results may be brought about without causing discomfort.

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[*] Tonsillectomies done in 1921 in 24 of the hospitals in Boston and seven adjoining cities, population 1,180,000, were 13,325; operations done in private practice would increase this number. On the basis of these figures, the tonsillectomies done in one year in the cities of the United States of more than 10,000 inhabitants, population 46,750,000, would be 514,240±. The towns of 10,000 inhabitants or less, population 70,000,000, are not taken into account.

Surgeons in this city tell me that more tonsillectomies are done in private practice than in hospitals; this would make the number given above at least 1,000,000 instead of 500,000.

The figures relating to population were obtained through the kindness of Professor Davis R. Dewey.

The application of radium is simple for the patient. He has only to keep his mouth open while the physician holds the container against the tonsil. The container may be removed at intervals, in order to allow the patient to swallow saliva. If the throat is sensitive, a solution of cocaine may be used; in the majority of cases this has been unnecessary. As a rule, children coöperate readily.

Immediately after the treatment no especial change is noted; sometimes improvement begins promptly, and after two or three days, more or less, there is an exudation from the tonsils, which may continue for some time. Some kinds of tonsils diminish in size very strikingly within a few days, others very slowly. In a very few patients the tonsils have largely disappeared after one treatment, in others three longer applications, given at intervals of weeks, did not give as much result. Enlarged glands show improvement. In some cases the patient's general condition should guide us to the use of radium even when the appearance of the tonsils does not suggest it.

Improvement in the general condition, often marked diminution in the size of the tonsil, after only one treatment, and that not given in large amount, indicates that in a certain number of cases it may be sufficient to carry the treatment only far enough to obtain good drainage.

The earlier patients did not have as much treatment as I now use, but there has been some improvement, locally or otherwise, in nearly every one, with no interference in any case with the customary meals or occupation. The statements of patients, suffering from poisons originating in the tonsils, of improved well-being, alertness instead of lassitude, and desire instead of disinclination for work, have been the rule. It has been difficult to follow some of the patients for any length of time; they were treated, improved, were seen once or twice, and then disappeared. Of those who were treated more than a year ago there are only good results to report.

The following cases were not average ones, but show a striking response to radium treatment in adults:

Mrs. X., 60 years of age, had a succession of four severe colds during the winter; had her teeth x-rayed and as a result of this examination four of them were extracted, but she got no relief. She was below normal in her activities and well-being, and had a slightly ashen complexion.

The right tonsil was on a line with the pillars of the fauces, and the left extended 3 mm. beyond the pillars, was large and discharging, and the gland on that side was large and sensitive. I applied the radium to each tonsil for about 10 minutes, without the use of cocaine.

Within forty-eight hours after the treatment she was much improved and the gland had lost its sensitiveness. The third day after treatment the left tonsil was much reduced in size, and there was a concave instead of a convex surface in the part of the tonsil that had contained small masses of a pus-like material. The right tonsil was also reduced in size. Her improvement was evident in her voice and manner, and in the eyes and the color of her skin.

On the seventh day after treatment the gland had disappeared and both tonsils, especially the left, were greatly reduced in size. She had not had the slightest pain or even discomfort, and there was no change in the daily routine of her life except for the better. On the twenty-first day the tonsils had largely disappeared. When last heard from, six months after the first treatment, she was in excellent health and spirits. This case suggests that in some instances radium treatment, before extracting teeth or doing tonsillectomy, might render these procedures unnecessary.

Mr. Y., 48 years of age, was "crippled with rheumatism," by reason of which he had given up work for 8½ months. The tonsils were submerged and were not visibly enlarged. Both were treated with radium and a profuse exudation resulted.

Within a week he had some relief from rheumatism, in about two weeks he was much improved, and in one of the worst storms of the winter, a day on which he would not have ventured out before he had had radium treatment, he walked 1½ miles to the station and came to Boston to keep his appointment. After two weeks, he expressed himself as being in excellent physical condition, his eyes were bright and his color good. Four months after treatment, when last seen, there was still further improvement in his appearance, there had been no recurrence of the arthritis, and he said that he felt like a new man.

Mrs. E. M., 37 years old. On December 9, 1921, she gave a history of repeated attacks of tonsillitis with arthritis. The tonsils measured 1.5 cm. high by 1 cm. wide. Radium was applied to each tonsil without the use of cocaine. On the fourth day she had marked relief from the arthritis; the tonsils were smaller, and there was no irritation in the throat. On the twenty-first day she felt well, had no sore throat, and no arthritis; the tonsils were slightly smaller. Three and one-half months later, the patient was very well indeed, and the tonsils had disappeared. Six months after treatment she was still free from arthritis, and the throat was in fine condition.

The following case is in contrast to those just cited:

Miss Z. had recovered from an attack of arthritis, but had acute tonsillitis when she received radium treatment. After one application of this remedy to the tonsils, they were reduced to a very small size and gave no further trouble, but as four weeks later there was another attack of arthritis, a severe one, tonsillectomy was done without my being consulted, the small size of the tonsils greatly facilitating the operation, yet neither operation nor radium prevented a recurrence of arthritis; in less than three weeks after the operation she had another attack, followd in about four weeks by still another. At this time an x-ray examination showed abscesses around two teeth; since the removal of these teeth three months ago she has had no further attacks of arthritis. This case suggests that we may be able to infer, by the application of radium, whether or not certain complications have their origin in the tonsils, without resorting to tonsillectomy.

During the past winter, the house officers at the Boston City Hospital have chosen radium treatment instead of tonsillectomy, except one who had decided on operation before he appreciated what radium could do. He, however, chose radium for the removal of the part of the tonsil left after operation. This small group of seven have since been free from their customary attacks of tonsillitis.

Of these 101 cases,

- 44 had enlarged tonsils;
- 33 had tonsillitis; 2 acute, 31 with history of recurrent attacks;
- 24 had enlarged or otherwise diseased tonsils, with complications as follows:
    - 14 arthritis
    - 7 cardiac disease
    - 1 cardiac disease and arthritis
    - 2 nephritis

Of the 44 cases with enlarged tonsils, the tonsils were reduced in size in 41 cases; in 3 they were not reduced.

Of the 33 cases of tonsillitis, the tonsils were reduced in size in 31 cases; the remaining 2 cases were lost sight of.

Of the 14 cases with arthritis, in 11 the arthritis diminished or disappeared; in 1 it remained; in 1 it recurred after both radium and tonsillectomy, but had not recurred, when last heard from, after the extraction of two teeth; 1 died of pneumonia.

Radium treatment, of course, had no effect on the old cardiac disease of the 7 cases noted.

The case of cardiac and arthritic trouble, and the 2 cases of nephritis, were lost sight of.

Radium is a powerful agent both for harm and for good. The physician should be well-informed about radium before he ventures to apply it; otherwise he may do harm to some patients, or fail to do the good that should be accomplished. Professional training and experience are required to determine the conditions under which it should be employed for treating the tonsils, and the amount and quality of the radiations which should be used.

Radium is useful for children, and especially so for adults, to whom operation may bring great discomfort and serious danger, and possibly death; as well as for those who, on account of cardiac or other disease, are not suitable subjects for operation.

The radiations from radium salts are, I believe, more suitable for the treatment of tonsils than the x-rays, because the former are uniform in output and thus permit of accurate dosage; and further, because the radiations from radium salts are applied through the mouth to the tonsil and are nearly all absorbed by the tonsil itself, whereas measurements of the x-rays, made with a fluorometer, show that these rays, being applied from the outside of the jaw to the tonsil, are absorbed to a large extent by the intervening tissues, where they are not desired, the parotid gland being especially susceptible to them, before they reach the tonsil.

I have shown chiefly thus far that the method here presented is harmless; that tonsils have been reduced in size; that recurrences of tonsillitis have been prevented, and that some patients suffering from arthritis have been relieved.

DISCUSSION OF DR. WILLIAMS'S PAPER.

DR. GEORGE W. GAY, Chestnut Hill: Dr. Williams's interesting paper, coming as it does from a pioneer in the therapeutic use of diphtheria antitoxin, the x-ray and radium, merits the thoughtful attention of the profession. In over a hundred cases of enlarged, inflamed, or otherwise diseased tonsils he has succeeded in reducing the size and the inflammation in a very large proportion by exposure to the direct radiation of radium. In 77 uncomplicated cases of enlarged and inflamed conditions of these organs a practical cure was obtained in 72 instances and two cases were lost sight of. A painless, non-operative method of treatment of these affections that proves successful in 93 per cent. of the cases is certainly worthy of consideration.

Radium not only has a distinctly beneficial effect upon the size and condition of the tonsil, but the crypts, which are the favorite resort of noxious germs, are obliterated, thus closing what is considered by many authorities a ready avenue by which the products of these bacteria enter the system. If the modern theory that certain diseases, as the so-called rheumatic affections, find entrance through the tonsils be correct, then the importance of destroying this avenue of approach becomes strikingly apparent. Should time and further experience confirm Dr. Williams' admirable results, the radium treatment of diseased tonsils must be considered a distinct advance in therapeutics. There are good reasons for anticipating this desirable result.

Another important feature in Dr. Williams' work is the fact that his scientific attainments, derived in part from his long and intimate connection with the Massachusetts Institute of Technology, of which institution he is a graduate, enable him to determine the ratio of the direct radiation of radium upon the desired area, to the indirect effect, the back kick through the container, of this agent upon the surrounding tissues. He is, thereby, able to remove certain objections that have been advanced against the use of radium in the throat. Another objection that has been made against its use in the throat is that we do not know the ultimate results of the treatment extending over three or four years. From the fact that seventeen years' experience with the agent upon the skin and a year and a half's experience in the throat have produced no untoward results, this objection would seem to be more academic, more theoretical than practical. Properly used, this remarkable agent would seem to have no deleterious effects, even in those rare instances in which no benefit results from its use.

One important fact in the use of radium should be constantly borne in mind and that is the marked difference in the reliability of the radiations of radium itself and the emanations from a solution of the substance in water. The former are permanent and unchanging; the latter soon lose their power and are useless. Radiation, and not emanation, is the only unfailing source of radium effects.

Of course you are all familiar with the happy effects of this agent upon various affections of the skin, as the epitheliomas, moles, birthmarks, etc. My personal experience is confined chiefly to the epitheliomas. The results have been most satisfactory. In the early days of radium an epithelial growth upon my face of three or four years' duration was subjected to five exposures of radium with no discomfort whatever. The crust came off in a short time, leaving a smooth, normal surface and there has been no return for 15 years. So many favorable results have come to my notice that I should hesitate to recommend a surgical operation for the removal of these growths, if proper treatment by radium were available.

In conclusion allow me to say that a painless, safe, efficient and non-operative method of treating diseases of the tonsils that is successful in more than 90 per cent. of the cases, is worthy of the serious consideration of the profession. Dr. Williams' admirable work merits the highest appreciation of the physician and the public.

Dr. C. R. C. Borden, Boston: I desire to congratulate Dr. Williams on the splendid results which he has obtained by this new method of treating diseased tonsils. The percentage of successes which he has had is remarkably large and I feel disappointed in the results of my own experience.

Toward the close of last year, I was visited by a gentleman who represented one of the large radium companies of the United States. He had been calling upon the various nose and throat specialists to interest them in radium as a substitute for operation on the tonsils. After a consideration of the matter I asked him to treat a series of cases with radium and then allow me to remove the tonsils and study them with regard to their condition. This he agreed to do.

The speaker today has made the statement that the screening of radium is an easy matter.

With regard to this point I should like to report a recent experiment conducted by Doctor I. J. Walker of Boston. He purchased six needles of radium, each containing ten milligrams. As a means of safety these needles were kept in a circular lead case with walls nearly half an inch in thickness. To test the penetrating power of the radium he placed the lead case containing the six needles in a steel safe. In a filing-cabinet in the next room with a thick wall between he placed a photographic plate upon which was suspended a pair of surgical scissors. The following morning the plate was found to show a perfect image of the scissors. Thus, the rays had penetrated the lead case, the steel wall of the safe, the wall dividing the rooms, the wall of the filing-cabinet and the several air spaces between.

The terrific penetrating power of radium as shown by this experiment so alarmed me that I hesitated to employ it within the mouth, and turned my attention to the x-ray which affords a similar and much better known treatment.

It had been known for some time by members of the nose and throat profession, that x-ray was being used by the Rockefeller Institute and Dr. Wetherbee of New York. Dr. Paul Butler and I went to New York and called upon Dr. Wetherbee. He was exceedingly cordial and frank. He described his large number of cases; gave statistics; showed us his apparatus, and furnished us with his working data as to dosage, spark gap, time of exposure, etc. He also described minutely the early work at the Rockefeller Institute, and generously instructed us how to proceed in a scientific research from the point where he left off.

On our return to Boston we arranged to continue the work for the purpose of determining, if possible, whether or not it was successful and clinically worth while. Dr. Frank L. Richardson offered his services for the anesthesia, a sacrifice of time which was greatly appreciated, since it afforded the best possible opportunity for minute observation during the operations. Dr. Butler, of course, carried on the x-ray work.

The first case was that of a young girl with a semi-acute ear which was discharging freely. Her throat was red, and her tonsils were somewhat enlarged and inflamed. In this case we used one application of the x-ray. Forty-eight hours later I found the ear to be nearly well; the tonsillar inflammation had subsided to a marked degree, and I thought at the time that the tonsils had considerably decreased in size. In looking back over the series of cases treated, I am inclined to think that the supposed reduction in the size of the tonsils was largely imagination. The effect upon the ear, however, was real and remarkable. Four days later I removed the tonsils without any bleeding whatsoever. The operation in the next four cases was also practically bloodless, but one sponge being used in the first five cases. The sixth case bled profusely, requiring the use of many sponges. This case, however, may not have been a fair subject for the series, since two years before the patient had been very ill for several months with black smallpox at her home in Cairo, Egypt, and at the time of our treatment and operation her general physical condition was not particularly good.

If I remember rightly, we treated sixteen cases with x-ray and I operated upon fourteen. The number of treatments varied from one to four. Undoubtedly the x-ray treatments decreased the hemorrhage somewhat, but in that respect one application seemed better than two or more. My own experience is that tonsils treated by x-ray exposure do not decrease much in size. Although on inspection they appear to be smaller, yet when removed they are fully as large as before and in some instances decidedly larger.

The tonsils removed during this series of cases have been preserved. They will be sectioned and studied by Dr. Mallory. When his report is received, we shall have something definite upon which to base a scientific conclusion, but until that time it must remain a matter of opinion.

Personally, I feel, at the present moment, that neither x-ray nor radium has any lasting influence on chronically diseased tonsils which are filled with pus pockets, and that careful dissection and removal are the only means of permanently dealing with them.

Tonsils which the x-ray seem most to benefit were often found, at the time of operation, to be the worst. Some of them are mere bags of pus, and two of them even burst from the pressure of the grasping forceps; yet prior to the time of the operation these tonsils appeared to have become smaller, whiter, and smoother in outline.

If the tonsils treated by Doctor Williams have atrophied to such a point that infection is no longer present or possible, he has accomplished that which will confer an untold blessing upon countless thousands who will escape operation on the tonsil and the discomforts attending upon it. But, may I ask, can we accept Dr. Williams' opinions which are based upon inspection alone, or upon a more or less temporary cessation of symptoms?

Dr. Williams (in reply to Dr. Borden): I may have met the same representative of a radium company who saw Dr. Borden. Before answering Dr. Borden's question, I need a little more information; may I ask Dr. Borden how much radium this representative used, and what the quality of the radiation was?

As regards the radium picture of the scissors, it was taken after a very long exposure and by the gamma rays, which form a very small percentage of the radiations from radium, but have great powers of penetration. I tested radium more than 18 years ago and found that, when held on the chest, it would set up fluorescence on a suitable screen placed on the back; I then tried iron and steel, but I did not have enough at hand to absorb the radiations. Then I tried lead, which is far more impenetrable to the radiations than iron or steel,—one inch, two inches, three inches of solid cast lead—and still some radiations went through. In other words, a very small amount of penetrating rays, with a very long exposure, will take a photograph, but a small amount of these rays for a few minutes may be disregarded as to danger.

After 26 years' experience with the X-rays I know that they are very useful. Their disadvantage is their uncertain dosage. You may put the same amount of energy into different X-ray tubes, as far as you can measure it by the spark gap and the current, and yet get different amounts of X-rays issuing from these tubes, or you can put the same tube on different measurements as to spark gap and current, and yet not get the same amount of X-rays. Therefore, I say that the dose of X-rays is uncertain; X-rays may vary in quality as well as in amount. With radium, on the contrary, one may get radiations of the same amount and of the same quality.

Dr. Borden (answering Dr. Williams's question): I think you misunderstand me as far as my associations with this man go, for I had no cases with him. He handled cases in this town for other men. He told me that his plates contained 30 milligrams and that they were guaranteed by the United States Government to be pure radium and to be that weight. He, furthermore, told me that most of the radium in use had not been so standardized by the Government, and that very few people knew what was in it.

As regards the measurements of X-rays, it seems to me it would be possible to buy standardized machines and know exactly the spark gaps.

Dr. Alexander Forbes, Milton: I should like to ask Dr. Williams if it is possible to measure accurately the quantity of emanation by the modern electrical methods, and wonder why it is not quite as accurate to use measured emanation as it is to use the radium itself.

Dr. Williams (in reply to Dr. Forbes): The radiations from the emanations of radium can, of course, be measured, but they lose one-half their strength in less than four days, and this process of decay continues; whereas the output in quantity and quality of the radiation from radium salts is uniform.

Dr. Cadis Phipps, Boston: I think we cannot depend upon the appearance of the tonsil alone but we can note the general feeling and the general condition of the patient in regard to joints, headaches, sore throats, etc. I am speaking from the experience of two or three patients I have had occasion to refer to Dr. Williams, and also in my own case. I had reached the stage in my own tonsils when I felt that I must have an operation. I put it off and finally I had Dr. Williams apply radium. They shrank down to white, small, bodies, and I was relieved of the unpleasant rheumatic symptoms which were putting in appearance, and my general health improved. I know the same thing is true in the case of some of my patients.

Dr. H. V. Reynolds, Brookline: I have had several cases in adult women with tonsils diseased who refused positively to have tonsillectomy done and had radium. There was no unpleasant reaction, and the tonsils gradually melted away with no unpleasant symptoms or discharge, and with the improvement in each case such as I had seen following tonsillectomy. In fact, I could see no difference in the after-condition of the patients in tonsillectomy or removal by radium, except that there is a little contracted fibrous tissue at the base of each of the tonsils. The glandular part seemed to have disappeared.

Each patient was an intelligent woman, and each one is satisfied with the improvement that she has noticed from this treatment.

A Member: There were four cases in my out-patient department where I had radium applied to one tonsil only. It was done by the same gentleman of pleasant appearance, to whom Dr. Borden has referred. In three weeks to three months all the tonsils were removed and you could not tell the difference, even in the microscopic examination. There was no shrinkage and there seemed to be no results from the radium.

Dr. Williams (closing): It seems to me that it is well for a physician to know what goes into the X-ray tube, and also important for him to know what comes out of it.

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CINCINNATI UNIVERSITY HONORS DONORS OF LARGE GIFTS TO MEDICAL SCIENCE.

In honor of John D. Rockefeller and Andrew Carnegie, the board of directors of the University of Cincinnati has established two chairs to bear their names in the College of Medicine.

The obstetrics department will be known as the John D. Rockefeller Chair of Obstetrics, and the professorship in biochemistry will be the Andrew Carnegie Chair of Biochemistry.

The University of Cincinnati is said to be the first large university or college in the country to thus honor the names of Rockefeller and Carnegie for efforts made to advance science and education. It was declared that both the Rockefeller Foundation and the Carnegie Foundation, which are endowed heavily, had shown great interest in the scientific attainments of the university.—*The Ohio State Medical Journal.*

◆

CAMPAIGN AGAINST MOSQUITOES.

The Board of Conservation and Development in New Jersey has recommended the appropriation of one million dollars to be used over a period of five years against the mosquito.

It is claimed that when the State shall have been cleared of mosquitoes the property value of the State would be increased by five hundred million dollars.

New England Surgical Society.

Provisional program of the meeting of 1922, to be held at Burlington, Vermont, Friday, September 22, and Saturday, September 23:

FRIDAY MORNING.

9.00 A.M. Clinic at Mary Fletcher Hospital, Burlington.

12.30 P.M. Lunch at Hotel Van Ness, as guests of the Vermont members of the Society.

FRIDAY AFTERNOON, 1.30 O'CLOCK.

Hotel Vermont—Roof Garden.

Hare Lip.—William E. Ladd, M.D., Boston.

Tuberculous Cervical Adenitis in Children.—James S. Stone, M.D., Boston. Discussion: opened by Dr. Frederick Hussey and Dr. Charles G. Mixter.

A New Operation for Retroversion of the Uterus.—John W. Keefe, M.D., Providence, R. I.

Carcinoma of the Cervical Stump.—Lincoln Davis, M.D., Boston. Discussion: opened by Dr. Lyman Allen and Dr. Herbert L. Smith.

Some of the Lessons Learned from a Series of 500 Prostatectomies.—Arthur L. Chute, M.D., Boston.

The Importance of Pyelography in Recognizing the Causes of Obscure Abdominal Symptoms.—Richard F. O'Neil, M.D., Boston.

The Silent Kidney.—J. Dellinger Barney, M.D., Boston.

Kinks of the Ureter.—Arthur H. Crosbie, M.D., Boston. Discussion: opened by Dr. William W. Townsend and Dr. S. B. Overlock.

4.00 P.M. Boat ride on Lake Champlain—Steamer Ticonderoga. Wives and children of members are invited.

7.00 P.M. Annual Dinner on board Steamer Ticonderoga. Address of the President, "Progress in Surgery Overseas," Dr. George E. Armstrong, Montreal.

SATURDAY MORNING, 9.00 O'CLOCK.

Business Meeting.

Local and General Anaesthesia in Strangulated Hernia.—Edward P. Richardson, M.D., Boston.

The Results of Anaesthesia in My Own Service.—Halbert G. Stetson, M.D., Greenfield, Mass. Discussion: opened by Dr. Alfred M. Rowley.

Myeloma of the Spine.—Robert B. Osgood, M.D., Boston.

Myositis Ossificans Traumatica.—Dudley Carleton, M.D., Springfield, Mass. Discussion: opened by Dr. William C. Peters and Dr. Jason Mixter.

NEW "WRINKLES" IN SURGERY.

(Five Minute Topics)

A device for hemostasis and drainage following suprapubic prostatectomy.

A method of implanting radium needles in tumors of the bladder.—John M. Cunningham, M.D., Boston.

The Anal Button for relief of post-operative tension in the Colon.—Ralph W. French, M.D., Fall River, Mass.

Pre-Operative and Post-Operative treatment of toxic myocarditis associated with gall-bladder disease.—Frederick V. Hussey, M.D., Providence, R. I.

Skin Grafting in two stages.—Charles A. Porter, M.D., Boston.

Injuries to the Spleen; including wounds and ruptures of that organ.—Eugene Pool, M.D., New York City (by invitation). Discussion: opened by Dr. Charles A. Porter.

Diverticulum of the Oesophagus.—Frank H. Lahey, M.D., Boston.

Report of a Case of Diverticulum of the Oesophagus.—Lucius C. Kingman, M.D., Providence, R. I.

Myoma of the Stomach.—Ernest L. Hunt, M.D., Worcester, Mass. Discussion: opened by Dr. Fred B. Lund and Dr. John M. Gile.

12.30 P.M. Lunch at Hotel Vermont.

SATURDAY AFTERNOON, 2..00 O'CLOCK.

Intestinal Obstruction by Enteroliths.—Charles R. Abbott, M.D., Clinton, Mass. (by invitation), Ernest L. Hunt, M.D., Worcester, Mass. Discussion: opened by Dr. P. P. Johnson and Dr. George A. Matteson.

Arteriomesenteric Obstruction of the Duodenum.—Henry C. Tinkham, M.D., Burlington, Vt. Discussion: opened by Dr. John T. Bottomley and Dr. Charles G. Mixter.

Post-operative Intra-Abdominal Adhesions.—Ralph H. Seelye, M.D., Springfield, Mass. Discussion: opened by Dr. George M. Sabin and Dr. J. C. Hubbard.

NEW "WRINKLES" IN SURGERY.

(Five Minute Topics)

Enterostomy as a safety valve in connection with Intestinal Suture.—Daniel F. Jones, M.D., Boston.

Home-Made Catgut.—Michael J. Fallon, M.D., Worcester, Mass.

Title to be announced.—Ernest T. Wells, M.D., Hartford, Conn.

Title to be announced.—John B. Wheeler, M.D., Burlington, Vt.

Death under general Anaesthetics.—George B. McGrath, M.D., Boston (by invitation).

Surgery in Diabetes.—Arthur T. Jones, M.D., Providence, R. I. Discussion: opened by Dr. William H. Bradford.

Hernia from the Employer's Standpoint.—Robert J. Graves, M.D., Concord, N. H.

Post-operative swelling of the upper extremity following operations on the breast and axilla.—Willis E. Hartshorn, M.D., New Haven, Conn. Discussion: opened by Dr. S. A. Mahoney and Dr. H. G. Stetson.

Officers for 1922: President, Charles A. Porter, Boston, Mass.; vice-president, Herbert L. Smith, Nashua, N. H.; secretary, Philemon E. Truesdale, Fall River, Mass.; treasurer, Peer P. Johnson, Beverly, Mass.

Executive Committee: Lyman Allen, Burlington, Vt.; John W. Keefe, Providence, R. I.; John F. Thompson, Portland, Me.; Seldom B. Overlock, Pomfret, Conn.; David W. Cheever, Boston, Mass.

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CENSORS' MEETINGS.

The Censors for the several districts will meet for the examination of applicants for fellowship on the first Thursdays of May and November.

The Censors for the Suffolk District will examine applicants residing in that district and also applicants who are non-residents of Massachusetts.

Applicants for fellowship should apply to the Secretary of the District Society of the district in which they reside (have a legal residence) at least one week before the date of a given examination, taking with them their degrees in medicine.

Book Review.

Tuberculosis and the Community. By JOHN B. HAWES, 2D. Lea and Febiger: 1922. 163 pages.

In this presentable volume of modest size, Dr. Hawes deals with tuberculosis as it affects the community. It is not written purely for the medical profession or for the layman, but for any who may be interested in community health as it is affected by tuberculosis. The style is readable, the subject-matter clear to physician or layman, facts are plainly set forth, and important details are not neglected.

The cost of tuberculosis to the community, an argument that generally carries weight, is vividly expressed. The parts that various factors play in the battle against this disease are taken up in detail: hospitals and sanatoria, dispensaries, after-care, the nurse, schools, housing, occupations. Concrete advice is given in the chapters on a Tuberculosis Program for Small Cities and Towns, and Present Needs of the Tuberculosis Campaign.

The writer is to be congratulated on having covered such an important subject so thoroughly in such a few pages. A readable and instructive book, it fortunately lacks that formidablenesss of size that is so often a deterrent to perusal.

The Massachusetts Medical Society.

MEMBERSHIP CHANGES FOR THE MONTH OF AUGUST, 1922.

OFFICIAL LIST (7TH).

Compiled by the Secretary.

ALPHABETICAL LIST.

Allen, Harold M., Lawrence, office now Room 503, Bay State Building.

Austin, A. Everett, Boston, from 144 Commonwealth Ave. to 270 Commonwealth Ave.

Baker, Chester Stoyle, Lowell, now 10 Merrimack Sq.

Blake, John Bapst, Boston, office now 371 Commonwealth Ave.

Bryant, Mason David, Lowell, office now 9 Merrimack St.

Caisse, George E., Lowell, office now 759 Merrimack St.

Carr, Gladys L., from Weymouth to Dubuque, Iowa, 253 W. 10th St.

Clare, Wendell Phillips, from Boston to Chelsea, U. S. Marine Hosp. No. 2.

Cunningham, Joseph Henry, died at London, England, August 28, 1922, aged 55.

Dudley, Oscar A., from Pittsfield to Cochituate (Wayland), office Worcester, 614 Park Building.

Everett, Willard S., from Newton Upper Falls to New York City, 303 First Ave.

Feldman, Louis, Boston, office now 360 Commonwealth Ave.

Foot, Nathan C., from Milton to Cincinnati, Ohio, 140 East Interwood Ave.

Gage, Fred Leon, Lowell, office now 9 Central St.

Gibson, David Howard, from South Boston (Suffolk) to Cambridge, 76 Reservoir St. (Middlesex South).

Glickman, Alfred Myron, from South Boston (Suffolk) to Springfield (Hampden), 476 Chestnut St.

Guibord, Alberta S. B., office now Boston, 210 South St.

Hamilton, Wallace F., from Newton to Wellesley, 3 Denton Road.

Howard, Margaret E. P., from Reading (Middlesex East) to Roxbury (Norfolk), New Eng. Hosp. for Women and Children.

Hymen, Max H., Lowell, now 174 Central St.

Lanpher, Howard A., from Chester to Hartford, Conn., 61 Rosemont St.

Learned, William Turell, died at Fall River, August 14, 1922, aged 61.

Marchand, Eleanore G., from Boston (Suffolk) to Salem (Essex South), 260 Washington St.

Marchand, Jean C., Salem, now 260 Washington St.

McCluskey, Richard J., Lowell, now 174 Central St.

McGannon, Thomas G., Lowell, office now 10 Merrimack Sq.

Meigs, Joe Vincent, Brookline, office now Boston, 286 Marlborough St.

Murphy, Thomas W., Lawrence, now 55 Bradford St.

O'Donnell, George Thomas, from Springfield (Hampden) to Dorchester (Norfolk), office Boston, State House.

Ohler, William Richard, from Boston (Suffolk) to Jamaica Plain (Norfolk), office Boston, 226 Marlborough St.

Prince, Calvin Oliver, died at Plymouth, July 28, 1922, aged 49.

Rice, Florence F., from Cambridge to Allston, 25 North Beacon St.

Richards, Cyril G., from Boston to Kenosha, Wis., Kenosha Clinic.

Richards, Thomas K., Cambridge, office Boston, now 520 Commonwealth Ave.

Richardson, Edward P., Boston, office now Mass. General Hospital.

Risley, John N., New Bedford, now 283 Union St.

Scannell, David D., Boston, from 366 to 320 Commonwealth Ave.

Schunk, Clara M., from Melrose to Boulder, Colo., Boulder, Colorado Sanatorium.

Shafer, Rudolph J., Lowell, now 65 Wellington Ave.

Smith, Richard Ilsley, Boston, now 24 McLean St.

Tighe, Michael A., Lowell, office now 9 Central St.

Walker, Lewis Marshall, from Roxbury to North Little Rock, Ark., U. S. Vets. Hosp. No. 78.

Welch, Edward J., Lowell, office now 226 Merrimack St.

Wight, Freeman Clark, Boston, from 192 Dartmouth St. to 32 Hayward Pl.

Young-Slaughter, Emma E., Lowell, office now 545 School St.

ADDRESSES UNKNOWN.

Azadian, David George.

Kelley, Robert Edward Stack.

Lawlor, John Charles.

McClintock, Elsie.

McConnell, David James.

Seibels, Robert Emmett.

Whitcomb, Clarence Adelbert.

Changes of address should be sent to the Secretary, Dr. Walter L. Burrage, 42 Eliot Street, Jamaica Plain 30.

THE BOSTON
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Established in 1828

Published by The Massachusetts Medical Society under the jurisdiction of the following-named committee:

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The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The Boston Medical and Surgical Journal, 126 Massachusetts Ave., Boston, Mass.

THREE FACTS CONCERNING THYROID DISEASE.

The modern conceptions of thyroid disease have been presented from time to time in the columns of this Journal. Certain facts, however, concerning certain aspects of thyroid conditions stand out as of extreme importance to the physicians who are first called to give advice. The first is the necessity of having in mind the possibility of sub-sternal or intrathoracic goiter in all nodular enlargements of the thyroid. This is a condition which distinctly adds to the risk of the operation, and one which may be obviated by the early removal of all low-lying nodular goiters tending to extend beneath the sternum or clavicle. The second fact which should be kept in mind is that malignancy of the thyroid occurs practically always in adenomata of the thyroid which have existed benignly for some years; that there are no features from which the transition to malignancy may be suspected; that when malignancy is present a fatal outcome is almost certain. Hence the removal of benign adenomata of the thyroid in those patients approaching or within the cancer age is even more urgently indicated than in breast tumors, where the percentage of cancer cures is very much higher. Third: Regardless of the views held as to the most desirable method of treatment for thyroid disease,—rest, radiation or surgery,—patients should not be permitted to continue with unfavorable progress under any form of treatment until they reach a stage of such intense toxicity that no active measures whatever are possible. Active surgical measures should be undertaken, in cases which fail to improve with other forms of treatment, before such a lamentable and often fatal condition is reached.

EXPERT TESTIMONY IN COURTS.

At a joint meeting of the Hennepin County Medical Society of Minnesota and the Hennepin County Bar Association, the following resolution was adopted:

RESOLUTION—
JOINT COMMITTEE OF LAWYERS AND PHYSICIANS.

1. Whereas, there is evidence of a growing dissatisfaction with the present method of adducing expert medical opinion offered in the trial of civil and criminal actions, and

2. Whereas, such dissatisfaction is due very largely to the heavy burden upon litigants for expert advice; the prolonging of trial work; and the uncertainty of outcome and difficulty of settlement due to the irreconcilable conflict in the testimony on the opposing sides of the case, and

3. Whereas, this situation has developed to such an extent that comment by the trial courts and also the courts of last resort, and by others having knowledge of the facts, is taking on a character tending to cast reflection upon the skill and integrity of the members of the medical profession and legal profession, and

4. Whereas, with a view of correcting this situation in so far as may be practicable, a joint committee of the physicians and the lawyers has been making a study of this subject for the purpose of working out and proposing some concrete plan or method to be used in connection with trial court work as a means to remove as far as possible this dissatisfaction,

5. Now, Therefore, Be It Resolved by the members of the Hennepin County Bar Association, and by the members of the Hennepin County Medical Society in joint meeting assembled on May 6, 1922, that all physicians competent to qualify as expert witnesses upon the various subjects in litigation, shall be named annually by the Hennepin County Medical Society, from which number any trial judge, or any one or more of the litigants in any suit, may select a commission of three or more physicians to conduct a joint examination for the purpose of furnishing expert testimony relating thereto,

6. Provided, However, that any selection and appointment of any such commission by the court shall be made only upon stipulation of the litigants, and in any case where the litigants cannot agree upon the three names, each

side may select one physician with provision that the two physicians so selected may select a third.

7. BE IT FURTHER RESOLVED, that the compensation for any services rendered in making any such examination, or giving expert testimony concerning same, shall be based upon a schedule to be designated by resolutions of the Medical Society and in no case shall the physicians who make such examinations, or give any such testimony, be permitted to know from what source their compensation is derived, such compensation to be payable through the Clerk of the District Court, or if that is not practicable, then through some trustee.

8. BE IT FURTHER RESOLVED, that it is the intention by this procedure to abolish the established relation of paid employee between any litigant and the physician or physicians giving such testimony in order to secure as far as possible impartial and unprejudiced testimony.

9. BE IT FURTHER RESOLVED, that any physician giving testimony in any case under this arrangement shall be subject to cross-examination under the usual rules by any one or more of the litigants in the case.

The following circular was sent with an explanatory note to each member of the society by the president, to be filled in and returned for use in making up a list to be recommended to the courts:

HENNEPIN COUNTY MEDICAL SOCIETY EXPERT CERTIFICATE AND DECLARATION.

The present method of obtaining expert medical opinion is unsatisfactory. I, therefore, believe that the plan as outlined in the resolutions passed at the joint meeting of the Hennepin County Bar and Hennepin County Medical Societies, May 6, 1922, should be followed until some law is enacted that will make it possible for all expert medical opinion to be given by a neutral commission.

I will be willing, under the resolutions adopted by the two societies, to act as a member of a neutral commission on expert testimony in the trial of civil and criminal actions.

Of the divisions of practice hereinafter specified, I am qualified to act as an expert in the ones checked:

1—General Medicine
2—General Surgery
3—Orthopedics
4—X-ray and Radium
5—Eye and Ear
6—Nose and Throat
7—Nervous and Mental
8—Pediatrics
9—Skin and Venereal
10—Genito-Urinary
11—Obstetrics
12—Gynecology
13—Anatomy
14—Physiology
15—Pathology
16—Bacteriology
17—Chemistry

I hereby promise to carefully examine and scientifically investigate any case for which I am selected to testify as one of a commission of experts; to give expert opinion only in such branches as I have named, after consultation with other members of the commission; and to give an impartial report or opinion, if cross-examined, according to the best of my scientific knowledge and belief.

(Signed) JOHN DOE.

Following is the resolution relating to fees for expert testimony, adopted by the Executive Committee of the Hennepin County Society:

FEES FOR EXPERT TESTIMONY BY COMMISSION.

Be it resolved by the Executive Committee of the Hennepin County Medical Society that the fees for expert testimony by Commission, as per resolutions passed by the Joint Meeting of the Hennepin County Bar Association and the Hennepin County Medical Society, May 6, 1922, be at the rate of $50.00 for each one-half day, or fraction thereof, consumed per member, as the minimum fee, and the maximum fee to be determined by the responsibility and importance of the case.

—P. W. W.

—*Minnesota Medicine*, Vol. 5, No. 9.

This method is devised for the purpose of securing justice and is commendable from the standpoint of ethics. For a long time there has been a feeling of dissatisfaction relating to expert testimony submitted by physicians. Because of the inability an honest expert sometimes experiences when he is trying to give information, eminent lawyers have deplored the custom which has prevailed, but have felt that any changes might not be in conformity with the principles underlying court procedures. Since the resolutions appearing above have been endorsed by a bar association we may hope that a solution of the problem has been found.

This subject has been discussed in this State, but up to the present time nothing has been done because, according to some lawyers, no plan has been devised which would assure full rights to a defendant in a criminal action. The theory of law seems to be that so long as a defendant's witnesses testify in conformity with the rules of evidence there can be no objection to the use of independent experts.

The action of the Hennepin County physicians and lawyers has only found expression in the form of resolutions thus far. The next question is as to whether the courts will endorse these resolutions and apply them in practice, and then still further, whether attorneys will restrict testimony to experts selected under this plan, for if lawyers are at liberty to ignore the resolutions the system will fall down. The practice in Minnesota courts will be followed with interest.

NEWS ITEMS.

The Boston Tuberculosis Association. The Boston Tuberculosis Association removed its offices on September 1 to Nottingham Chambers, No. 25 Huntington Avenue, just beside the Boston Public Library. Its new offices are in accordance with the modern policy of living in sunshine and fresh air. The rooms are on the sixth floor, high up above Huntington Avenue, and look out upon the end of the extension of Stuart Street and the free space about the Boston and Albany Back Bay station. The Association has been since 1903 on Joy Street, where it has had quarters in the Twentieth Century building. With the increasing contact with business organizations and the coming to the rooms of more and more workers, the Association has felt the need of being in a business location, and it has settled itself just at the border of the coming commercial district in the Back Bay.

It is with regret that the death is announced of Dr. Alexander Righter Craig, secretary of the American Medical Association, which occurred Saturday night, September 2, 1922, at Port Deposit, Maryland.

Recent Appointments.—Children's Hospital, Associate Physicians: Dr. James M. Gamble and Dr. Richard M. Smith. Assistant Visiting Physicians: Dr. Lyman A. Hoag and Dr. Arthur Goulding. Infants' Hospital, Visiting Physician: Dr. Richard M. Smith.

Stolen Certificate.—Dr. John O. Caldwell of Sharon has had his certificate of registration as a physician in Massachusetts stolen from him.

Weekly Death Rate in Boston.—During the week ending September 2, 1922 the number of deaths reported was 185 against 171 last year, with a rate of 12.63. There were 36 deaths under one year of age against 38 last year. The number of cases of principal reportable diseases were: Diphtheria, 47; scarlet fever, 14; measles, 14; whooping cough, 32; typhoid fever, 3; tuberculosis, 35. Included in the above were the following cases of non-residents: Diphtheria, 6; scarlet fever, 5; whooping cough, 2; typhoid fever, 2; tuberculosis, 9. Total deaths from these diseases were: Diphtheria, 1; scarlet fever, 1; whooping cough, 4; tuberculosis, 14. Included in the above were the following cases of non-residents: Diphtheria, 1; scarlet fever, 1; tuberculosis, 2.

Change of Office.—Dr. John Warren Sever announces that he has moved his office to 321 Dartmouth Street, Boston.

Babies Weighed at Weymouth Fair—An interesting and novel health demonstration was given at the recent Weymouth fair on September 1 and 2 by Miss M. Alice Gallagher, R. N., executive secretary of the Norfolk County Public Health Association. A corner of the Norfolk County agricultural tent was set aside and a child-weighing and measuring equipment was installed. There was no advertising, no contest and no prizes were offered, but the mothers quickly sensed the meaning of the work, and in the two days 202 children were weighed and measured. These ranged from babies of seven weeks to school children of 18 years. The results were very interesting, for of the entire group of country children, one in every four was under the proper weight for the height, betokening a degree of malnutrition, while a number of the little ones were more than seven to ten per cent. underweight. Incidentally, Miss Gallagher talked with the parents, and in behalf of her association distributed little pamphlets filled with health facts. It was a revelation to the parents and constituted a bit of educational work such as the association is prepared to do. The baby-weighing scales, which were purchased with money secured through the sale of Christmas seals last winter, were presented to the Weymouth Health Station, so that they may be of permanent benefit to the health of the children of the town.

The Weymouth Hospital.—This hospital, which was made possible by a drive for funds, is located in South Weymouth, Massachusetts, and will meet the desires of residents and physicians of that region.

The hospital is beautifully located and consists of the remodeled house of the late Albert Tirrell, who was a successful manufacturer in Weymouth. The drive netted $21,405.75. The cost of changing the building and supplying the equipment amounted to $7,791.17. The hospital was opened May 22, 1922, and the trustees have reported for two months, showing earnings of $2,526.82, and expense account of $1,635.21. Fifty-eight patients have been treated. The majority of the cases have been surgical.

Aug. 30, 1922.

Mr. Editor:

In re Weymouth Hospital: there are 20 beds, operating-room, delivery room and nursery. Miss Minnie M. Shofield is now Acting Superintendent. The Hospital expects to maintain a training school when it gets well under way, probably next year.

Yours very truly,
John C. Fraser.

Miscellany.

NARCOTIC DRUG INVESTIGATION.

The following statements are found in the extension of remarks in The House of Representatives by Hon. Lester D. Volk:

“In House Resolution No. 258 and in an address before this body on Friday, January 13, 1922, I called specific attention to rules and regulations issued by the Internal Revenue Department interpreting the Harrison Act, and having the force and effect of law,—a document as extraordinary as ever issued by this or any other Government in its presumptuous assumption of authority and ruthless disregard of facts and experience.

I refer to the rulings promulgated October 19, 1921, by the office of the Federal Prohibition Commission, over the signature of R. A. Haynes, Prohibition Commissioner, and D. H. Blair, Commissioner of Internal Revenue.

This ruling, in effect, disposes of a medical and scientific problem relating to the handling of narcotic-drug addicts by eliminating the physician and scientist and turning the entire matter over to Federal police, district attorneys, and favored sanitarium proprietors and underworld peddlers, who have reaped a golden harvest from their nefarious and illicit traffic.

Without any foundation in proven medical knowledge or experience, this ruling asserts that medical authorities agree' that addicts may not be treated unless confined within prison or sanitarium walls and that 'this consensus of medical opinion' is used by the Revenue Department as a basis for the policies of the prohibition commissioner.

In the early stages of the discussion of this problem in this House I received a letter from the Commissioner of Internal Revenue, written in response to my request asking to know upon whose authority the remarkable ruling just cited was promulgated. The reply stated that medical and other experts attached to the Treasury Department decided these questions.

The only other explanation vouchsafed was contained in the language of the regulation to which I have referred, which says:

> The following resolution, passed by the council of health and public education of the American Medical Association at its (the council) meeting on November 14, 1920, is pertinent in determining the period over which narcotic treatment should be extended in purely addiction cases.
>
> *Be it resolved*, That the council of health and public education of the American Medical Association indorses the principle expressed in the California law, section 8½, which forbids the use of opium and its derivatives in the withdrawal treatment of those addicted to the use of drugs for a period of more than 30 days after the commencement of the withdrawal treatment.

The American Medical Association may be stated to be the very bedrock of medical opinion in this Nation. It is comprised of the best brain and talent within a noble profession. It has in its membership about 90,000 of the physicians in the United States. It is bound by a code of ethics which has gone further than any other agency to place the practice of medicine upon the highest pinnacle and plane.

These men and this great institution are unimpeachable. Their integrity is undoubted. Their voice carries with it the weight of a professional body upon which the halt and the lame, the ill and well, must depend for very life itself. And when they speak by resolution we all may listen in full confidence that we are receiving the pure thought of medical wisdom and the real consensus of medical opinion.

AMERICAN MEDICAL ASSOCIATION REPUDIATES ACT OF ITS COUNCIL, ON ADDICTION.

It is of momentous importance, therefore, that the American Medical Association in solemn convention assembled should have arisen in its might and repudiated the minority findings of this so-called council, a group of five men out of this great body,—which minority findings they have dared to set forth, and officials of these United States have accepted, as the solemn opinion of all the medical fraternity.

This repudiation was not the action of a minority committee in the association but resolutions openly introduced and adopted by the vote of the house of delegates of the American Medical Association, representing 90,000 physicians, who had been acquainted with the use made of their organization by the Internal Revenue Department to bolster up unsound policies.

The house of delegates of the American Medical Association also knew to a man this House Resolution No. 258, which specifically described the connivance of Government officials responsible for the Prohibition Commissioner's ruling of October 19, 1921, and of members of the medical profession behind the findings of the council of health and public education of the American Medical Association, as a conspiracy to drive narcotic drug addicts into established sanatoria purporting to treat narcotic drug addiction. (See CONGRESSIONAL RECORD, 67th Cong., 2d sess., pp. 1335–1340, January 12, 1922.)

With this knowledge at hand, the house of delegates of the American Medical Association, representing a true consensus of opinion in general medical practice, voted on May 23, 1922, unanimous adoption of the following resolution, to be presented to this House:

> *Be it resolved*, That the house of delegates of the American Medical Association approves House Resolution No. 258, providing for a select committee of 15 to inquire into the subject of narcotic conditions in the United States.

And so forth. This resolution is a consensus of medical opinion, which neither this House nor the Internal Revenue Commissioner nor the Prohibition Commissioner can overlook or ignore. Nor does it stand alone as an expression of medical thought upon the subject of narcotic addiction and narcotic regulations.”

The resolution of the American Therapeutic Society is quoted as follows:

"*Be it resolved*, That this society indorse the resolution introduced by the Hon. Lester D. Volk, to the end that a careful and scientific investigation of the entire narcotic situation may be had so that both the public and the physician may be benefited thereby."

He then cites endorsement of his resolution by the American Public Health Association and the State Medical Society of North Carolina. His conception of the present narcotic drug situation is expressed in the following language:

"The honest are being persecuted. The innocent are being hounded and harassed and exploited. The sick are being denied care and treatment. The quack and the charlatan and the specific cure promoter are thriving upon their false promises and the hopes and gullibilities of the desperate.

Administration is being perverted and corrupted. Ignorant youth, untaught and uneducated in facts and truth, spurred on and his curiosity aroused by morbid and sensational presentation from irresponsible origins, is being drawn into the snares planted by the harpies of human woe and creators of human suffering—agents of the rapidly increasing criminal underworld traffickers and smugglers and peddlers.

The scientific and clinical work and research of men who have made an honest and able study of addiction is being ignored and blocked from recognition by propagandized unscientific and incompetent 'formularizations.'

From everywhere come increasing records of aggravation of the narcotic situation and of smuggling and peddling and connivance in it of administrative officials, the logical and inevitable outcome of a situation created by ignorance and propagandized misrepresentation and suppression of education and true information.

The time has come when the Federal Government must stand aside in scientific matters involving honest professional judgment and permit medical men to practice their profession unhampered by lay administrative dictation. The yardstick of rule and regulation must be discarded for the truer measure of 'good faith' based upon scientific medical teachings.

Shed upon this situation the light of truth, and all of the truth, and it will become possible of solution and checking and control. In no other way can this be done.

Make public and widespread all that is known or available upon this subject so that administrative officials can not avoid or evade facts and real issues and conditions and the public press can not be manipulated into sensational hysteria-creating advertising of selected cases of vice and degeneracy, to the neglect of the needs of the vast majority of the honest and deserving.

When the awakening and arousing and final expression of real 'consensus of scientific opinion,' as expressed in the unqualified indorsements of House Resolution 258, there can be no further excuse for continued persistence in domination over administration and administrative power and action of the fallacies now openly repudiated.

It rests now with the only unbiased, competent body which can openly and publicly and with widest recognition take up and seriously consider the material and evidence in this narcotic situation and compel its universal recognition—the Congress of the United States."

If there are any criticisms of Hon. Lester D. Volk's resolution they should be made public. If his contentions are sound, the medical profession should be active in support of his efforts.

THE ROYAL SOCIETY OF MEDICINE.

On the occasion of the annual dinner of the Royal Society of Medicine, presided over by Sir John Bland-Sutton, the Jenner Memorial Medal (awarded to persons whose work has been prominent in the prevention and control of epidemic disease) was presented to Dr. John C. McVail, LL.D. In making the presentation the President stated that vaccination rested today on a surer basis than ever before, and much of that was due to Dr. McVail's work. He believed that Dr. McVail was the first person north of the Tweed to receive that honour.

We have pleasure in joining in the chorus of congratulation to Dr. McVail, and we are glad to recognise that his unremitting labours of the past fifty years have been so fittingly rewarded.—*Glasgow Medical Journal.*

EMPLOYEES MAY SELECT PHYSICIAN.

NOT BOUND TO ACCEPT DOCTOR RECOMMENDED BY EMPLOYERS.

The Franklin District Medical Society at its July meeting took action in the matter of industrial concerns which hand their employees printed cards telling them to employ certain physicians when they are injured. It was voted to send communications to the newspapers, advising industrial employees of their right to employ any physician they choose. The appended communication is the result of that vote.

"To the Editor of *The Recorder:*

"Owing to the fact that some of our industrial plants see fit to hand printed cards to injured employees, requesting them to go to certain physicians, the Secretary of the Franklin District Medical Society was instructed at the July meeting of the Society to insert in the Greenfield papers a notice to the public informing them of their privilege to employ any physician they themselves may choose for such treatment, regardless of any effort on the part of their employer to influence them otherwise.

"That portion of the Workmen's Compensation Act (General Laws, Chapter 152, Section 30) pertaining to such free choice of physicians follows:

"'The employee may select a physician other than the one provided by the insurer; and in case he shall be treated by a physician of his own selection, or where, in case of emergency or for other justifiable cause, a physician other than the one provided by the insurer is called in to treat the injured employee, the reasonable cost of his services shall be paid by the insurer, subject to the approval of the department.'

Yours very truly.
CHAS. MOLINE, M.D.,
Sec'y Franklin Dist. Med. Society."
Sunderland, Mass., Aug. 2, 1922.
—*The Greenfield Recorder.*

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EXPOSURE OF THE PROPRIETARY MEDICINE INDUSTRY.

HEARST'S *International* proposes to issue a series of articles setting forth that "The patent medicine of the future is the one that will be advertised to doctors." The author of these papers is Paul H. DeKruif, who is lauded as a "brilliant" worker in laboratory investigation and, according to the prospectus, should be regarded as a great leader. Not having the honor of knowing the writer of these articles, information was sought by letter to the American Medical Association.

The reply is submitted.

Chicago, August 31, 1922.
The Boston Medical and Surgical Journal:

Replying to your letter of August 29, our records show that a "Paul H. DeKruif" was born in Zeeland, Michigan, in 1890, and received his pre-medical education at the University of Michigan. He is also reported to have attended the University of Michigan Medical School during the sessions 1910-1911, 1911-1912 and 1917-1918, but we do not have any record of his graduation or licensure. According to our reports his home address is Zeeland, Michigan. This is all the information we have at this office concerning him.

Yours very truly,
AMERICAN MEDICAL ASSOCIATION.

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Obituaries.

HAROLD CLARENCE ERNST, M.D.

Dr. Harold C. Ernst died at the Jordan Hospital, Plymouth, September 7, 1922, where he had been taken a short time previously for an operation, having been stricken while on the way to Boston from his summer home at Manomet. Dr. Ernst was born at Cincinnati, Ohio, July 31, 1856, the son of Andrew and Sarah H. Otis Ernst. His brothers were the late George A. O. Ernst, a prominent Boston lawyer, and Major-General Oswald H. Ernst, U. S. A., retired, now of Washington, D. C.

Dr. Ernst was fitted for college in Boston, graduating at Harvard in the class of 1876. He was pitcher on the celebrated Harvard baseball nines, J. A. Tyng being the catcher, the battery being the chief factor in winning several series with Yale. Ernst had a tall, commanding presence which graced not only the pitcher's plate but the army uniform during the World War and impressed the committees of the Legislature when he appeared before them in opposition to antivaccination or other harmful measures. After taking his M.D. at Harvard in 1880 he became house officer at the Rhode Island Hospital, settling in Jamaica Plain in practice in 1881 and joining the state medical society. In 1884 Harvard gave him an A.M. Bacteriology attracted him from the first; he entered the Harvard laboratory and in 1885 was appointed demonstrator of bacteriology, a position he held until 1889 when he was made instructor. In 1891 his title was assistant professor and in 1895 professor of bacteriology, continuing in the office until his death. He taught a generation of students. A pioneer organizer of a department of bacteriology in a medical school, he induced the city of Boston to establish a bacteriological laboratory in the early days, to prosecute work in the detection and prevention of diphtheria. At one time he was asked to make a visit with the staff of the Children's Hospital in order to bring the clinical side of medicine into touch with the laboratory.

In 1896 he wrote "Infectiousness of Milk;" in 1898 "Infection and Immunity;" in 1902 "Animal Experimentation," besides many articles in scientific and medical periodicals during his career. At one of his last appearances in public he gave a talk on "Immunity" at the annual meeting of the Boston Medical Library, January 10, 1922.

In the spring of 1906 Dr. Ernst displayed his great executive ability as a member of the committee which arranged for the dedication of the new buildings of the Harvard Medical School on Longwood Avenue, and he edited a history of the school; in the fall of that year he was appointed a member of the new standing committee on Medical Education of the Massachusetts Medical Society. This important committee was organized at the instance of the American Medical Association. Dr. Ernst remained the efficient chairman until 1919, it having been combined with the committee on medical diplomas when the by-laws were revised in 1913. After the American Medical Association began its series of February conferences on medical education in Chicago Dr. Ernst generally attended, bringing home reports to the Council; he devoted much time to the duties of his office and waged a continuous fight for better registration laws in the Commonwealth, appearing frequently with persuasive words at the State House.

In 1896 he became editor of the *Journal of Medical Research*, which he conducted with success until his death. He was a fellow of the American Academy of Arts and Sciences, on which he served as a councilor; a member of the Association of American Pathologists and for eight years its president; a member of the Association of American Physicians, of the American Society of Naturalists and of the Boston Society of Medical Sciences, acting as president of the last named organization for ten years.

Dr. Ernst is survived by his wife, who was Ellen Lunt Frothingham of Boston, a sister of the Rev. Paul Revere Frothingham, Congressman Louis Frothingham and Dr. Langdon Frothingham. They had no children.

His social affiliations included membership in the St. Botolph, Country, Old Colony, Plymouth, Tennis and Racquet clubs, and the Thursday Evening Club, of which he had been president.

Representing to the public in a dignified way the higher aims of medicine, his taking away leaves in the community a place that will be hard to fill.

WILLIAM STEWART HALSTED, M.D.

Death has claimed the second of the Johns Hopkins Hospital triumvirate, painted by John Singer Sargent,—the surgeon William S. Halsted. Dr. Osler passed to the great beyond in 1919. Dr. Kelly, we are glad to say, is still with us and actively at work. Dr. Halsted was born in New York, September 25, 1852, and died in Baltimore, September 7, 1922, therefore being in his seventieth year. He was a graduate of Yale in the class of 1874, and of the College of Physicians and Surgeons, Columbia, in 1877. Yale gave him an LL.D. in 1904, and he had an honorary F.R.C.S. from England in 1900, and one from Edinburgh in 1905. His medical training was in the city of New York where he served as attending physician to Charity Hospital, 1881–83; attending surgeon to Bellevue and Presbyterian Hospitals, 1885–87; associate surgeon Roosevelt Hospital and surgeon-in-chief, outpatient department, 1881–87; surgeon-in-chief Emigrants' Hospital, 1881–84, and surgeon-in-chief to the Johns Hopkins Hospital, Baltimore, since 1889; also professor of surgery there.

He was the author of many papers on surgery, pathology and physiology, was a member of the National Academy of Sciences, an associate fellow of the American Academy of Arts and Sciences, a member of the American Surgical Association, a corresponding member of the Harveian Society of London and of the Société de Chirurgie of Paris and many other societies. He was a man of international reputation.

HERBERT JOHN KEENAN, M.D.

Dr. Herbert J. Keenan died suddenly of heart disease at his home in South Boston, September 7, 1922, at the age of fifty-one. He was born in that part of the city February 10, 1871, attended the Lawrence grammar school and English high school and Harvard Medical School where he received his M.D. in 1894. Since then he had practised medicine in South Boston. He did work for the police department, served on the School Committee in 1903-04-05, was medical examiner for several fraternal organizations and life insurance companies and held membership in the Boston Lodge of Elks, South Boston Council, Knights of Columbus, Charitable Irish Society, Ninth Regiment Associate Members' Association, South Boston Citizens' Association, South Boston Medical Society and the Harvard Club of Boston. In his early practice Dr. Keenan made a specialty of children's diseases. He had a splendid physique, and was a constant attendant at the L-street bathhouse and appeared to be in the best of health until shortly before the end.

He is survived by his widow, Mrs. Nellie Donovan Keenan.

EDWARD ANTHONY SPITZKA, M.D.

Dr. Edward Anthony Spitzka, noted anatomist and criminologist of New York, died at his home in Mt. Vernon, N. Y., September 4, 1922, at the age of forty-six. He was the son of Edward Charles Spitzka, a pioneer neurologist and psychiatrist of New York, was educated at the College of the City of New York, taking his M.D. at the College of Physicians and Surgeons in that city in 1902. He was professor of general anatomy at Jefferson Medical College, 1906-1914. Dr. Spitzka performed the autopsy and examined the brain of Czolgosz, the assassin of President McKinley. His chief contribution to medical literature was his editorship of the 18th American edition of Gray's Anatomy. During the World War he saw service in France in the Medical Corps, ending with the rank of lieutenant-colonel.

He is survived by his widow, who was Alice Eberspacher of New York.

GEORGE MILBRY GOULD, M.D.

An important medical writer, one who understood words and their uses, providing the profession with medical dictionaries, also an editor of note, has passed to his long rest. Dr. George M. Gould died at his home in Atlantic City, N. J., August 8, 1922, after a brief illness from heart disease, at the age of seventy-three.

The son of George Thomas and Eliza A. Lapham Gould, he was born at Auburn, Me., November 8, 1848. During the Civil War he served as a drummer boy with the 63d Ohio Volunteers when only fourteen years old; enlisting in the 141st Ohio Volunteers in 1864 he finished the war with that regiment. The Ohio Wesleyan University gave him an A.B. in 1873 and an A.M. in 1892. He studied at the Harvard Divinity School in 1873 and 1874, graduating in the latter year, but without a degree, as had been the rule before 1870 and the general custom until 1874. For the next ten years he was a preacher, finally taking up the study of medicine at the Jefferson Medical College in Philadelphia and graduating in 1888 when he was forty years old. He began practice in Philadelphia at once, making a specialty of ophthalmology and serving as ophthalmologist at the Philadelphia Almshouse from 1892 and 1894.

Dr. Gould was editor of the *Medical News*, 1891–1895; *Philadelphia Medical Journal*, 1898–1900; *American Medicine*, 1901–1906. While still in the medical school he collaborated in the preparation of a compend of diseases of the eye, published in 1886–1888; he was a fellow of the American Ophthalmological Society; late in life he wrote a series of papers on the effect of eye strain on some noted literary characters such as Francis Parkman and Thomas Carlyle, that excited considerable interest. His first medical dictionary, "Students' Medical Dictionary," appeared in 1890, the eleventh edition of which was published in 1900. The "New Medical Dictionary" ran through ten editions and the "Pocket Medical Dictionary" came out many times between 1892 and 1913, while the "Practitioners' Medical Dictionary" had a large sale from 1906 to 1917. Dr. Gould was author of "Illustrated Dictionary of Medicine, Biology and Allied Sciences," 1894–1913; "American Year Book of Medicine and Surgery," 1896–1903; "Borderland Studies," 2 vols., 1896–1906; "Suggestions to Medical Writers," 1900; "Encyclopedia of Medicine and Surgery," 1900–1913; "Anomalies and Curiosities of Medicine" (in collaboration), 1901; "Biographic Clinics," 6 vols., 1903–1909; "History of Jefferson College," 2 vols., 1904; "Righthandedness and Lefthandedness, etc.," 1908; "The Infinite Presence," 1910; "Life and Letters of Edmund Clarence Stedman" (in collaboration), 1911.

Dr. Gould was married twice, first to Harriet Fletcher Cartwright, of Pomeroy, Ohio, October 15, 1876, and second to Laura Stedman, October 2, 1917.

Men like Dr. Gould are scarce in the ranks of the medical profession. His training as a clergyman gave him facility in expressing thoughts in words; his long study in language made possible the dictionaries; editing three leading periodicals gave practice in writing, an experience which was epitomized in his "Suggestions to Medical Writers;" he performed a noteworthy service in improving the quality of the English used by medical men. The profession is grateful.

RECENT DEATHS.

Dr. George Cook, former president of the New Hampshire Medical Society, and chairman of the New Hampshire Board of Registration in Medicine, died at his home in Concord, September 1, 1922, at the age of seventy-three.

Dr. Cook was born at Dover, N. H., November 16, 1848, and was graduated at Dartmouth Medical School in 1869, joining the state medical society in that year. He early became identified with the New Hampshire National Guard and served as major and surgeon of the First Division, Second Army Corps, U. S. V., in the Spanish War. During the World War he was chairman of the State Selective Service Board, being too old to enter the active service.

Dr. Cook organized the Alpha Kappa Kappa fraternity in the Dartmouth Medical School in 1890 and since then traveled about extensively organizing similar chapters—forty-eight in all—holding the office of grand primarius for the past ten years.

He held membership in the American Medical Association, the Historical Society, the Masons, the Odd Fellows and the Sons of Veterans. He had served as city physician, pension examiner, and as a member of the consulting staff of the Margaret Pillsbury Hospital in Concord.

A brother and two sisters survive him. The funeral services were held in St. Paul's Episcopal Church, of which he had long been a vestryman.

Mrs. Elizabeth J. Collins, cataloguer-in-chief of the Boston Medical Library for forty two years, has died of heart disease, after being in failing health for two years. The end came September first at three o'clock in the morning.

Mrs. Collins came to the Library five years after it was founded, having been trained at the Boston Public Library under Justin Winsor. Her conscientious and skilled labor has added much to the advancement of the institution through all these years. She will be missed by a large circle of members and friends.

Correspondence.

BIOLOGIC PRODUCTS.

Mr. Editor:

We should greatly appreciate your aid in bringing to the attention of members of boards of health and of physicians the great necessity of using biologic products before their expiration date. During the present summer two instances have come to our notice, in one of which a physician during the present month used a lot of our smallpox vaccine virus which was more than a year old; and in a second case a physician reported a failure to secure a "take" after using our vaccine virus bearing the expiration date May 30, 1922. We are constantly telling boards of health to carry stocks of biologic products sufficient to meet only a one month's demand, and in all our leaflets accompanying our biological products we ask physicians to limit their orders to ten-day periods. We request physicians to keep a record of the lot number on each package and to return any packages which have not been used before the expiration date stamped on the label. A short notice or an editorial would, we feel, be helpful in avoiding just such unsatisfactory results as I have mentioned.

Yours very truly,
Benjamin White, *Director.*

THE STING OF THE SEA NETTLE.

Mr. Editor:

Perhaps this might interest you, if true. A letter from New Hampshire states: "The Boston papers, last week, spoke of the Jelly-Fish as rendering our Down-East swimming contestants unable to cross the English Channel."

Yours sincerely,
Douglas H. Stewart, M.D.
128 W. 86th St., New York City.